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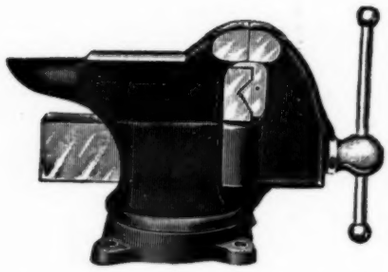
AMERICAN ARTISAN and Hardware Record

Vol. 79. No. 3. 620 SOUTH MICHIGAN AVENUE, CHICAGO, JANUARY 17, 1920. $2.00 Per Year.



"ROCK ISLAND" AUTOVISE

THIS style of **"ROCK ISLAND" VISE** is especially adapted for automobile and heavy repair work. It turns on a swivel, has 4 inch jaws, weighs 80 pounds and is a combination of vise jaws, pipe jaws and anvil.

This model is very popular as it is very efficient for all general work.

Note these strong points of merit—The ***screws*** are made of ***cold rolled steel.*** The ***handles*** are of ***cold rolled steel.*** The ***jaws*** are made from a fine grade of ***crucible cast tool steel.***

The ***nuts,*** which are given the greatest wear, are of malleable iron and are very easily replaced.

Nearly every man is a good prospect for a "ROCK ISLAND" VISE

"A Type and Size for Every Service"

HOME owners and men who like to "work around the house" are always good prospects for a **"ROCK ISLAND" VISE.** No matter what they may want in the way of quality vises you can serve them satisfactorily with **"ROCK ISLAND"** line.

The **"ROCK ISLAND"** line of vises is the largest and most complete line on the market. We are one of the few vise manufacturers who operate their own foundry. Manufacturers who do not make their own castings use the ordinary kind made by jobbing foundries.

"ROCK ISLAND" VISES are made from a mixture of the best iron and steel, which makes the castings very strong and tough. **"ROCK ISLAND" VISES** are painted with a high grade dull black finish and all finished parts are highly polished and lacquered.

We have a special catalog devoted to our complete line of vises. It is profusely illustrated and each style of vise is clearly described. Write for this special catalog today. Let us tell you about the profits to be made in selling the **"ROCK ISLAND"** line of vises.

We make the largest and most complete line of vises on the market. Write TODAY for our latest catalogs covering many lines you can sell.

ROCK ISLAND MANUFACTURING CO.

ROCK ISLAND, ILLINOIS

Published Weekly. Entered as Second-Class Matter June 25 1885 at the Post Office at Chicago Illinois under Act of March 3rd 1879

ALPHABETICAL INDEX AND CLASSIFIED LIST OF ADVERTISERS. 50 and 51

MAHONING HEATERS

Sell Themselves

So many superior qualities are involved in **MAHONING** construction that to tell of one would slight others equally as important.

No need to ***talk*** Mahoning qualities. ***Show*** your customer,—he will see it at a glance.

We want good live dealers everywhere, and offer a tempting proposition.

A style and size for every purpose.

MAHONING TYPE "C"

Illustration shows quite clearly the combustion as it takes place in the Mahoning system. Note how the admission of air through the slots in the firepot causes combustion to take place all around the outside of the fire. The hottest part of the flame is in direct contact with the outside surface of the heater where the radiation of heat takes place. Only one of the features that have made the Mahoning famous from coast to coast.

The MAHONING FOUNDRY CO.

YOUNGSTOWN, OHIO

A Mammoth Plant With a Mammoth Production

FRONT RANK

TRADE NAME REGISTERED

The Steel Furnace that is positively *gas-tight*, because it's *made right*.

Made of tested metal, cold-riveted together. No direct draft to warp and buckle. Stays in order.

If you're not handling the FRONT RANK you, your customers and we are all losing money. Write for illustrated literature and prices.

FRONT RANK

Steel Furnace

is fool-proof. Gets more heat value out of the fuel used; because its radiating surface is greater, and more of the heat generated in burning the coal is extracted before the smoke and gases are passed on up the flue.

MADE MARK REGISTERED.

Haynes-Langenberg Mfg. Co.

4058 Forest Park Blvd. St. Louis, Mo.

ESTABLISHED 1880
Representative of
The Hardware, Stove, Sheet Metal, and Warm Air Heating and Ventilating Interests
PUBLISHED EVERY SATURDAY

AMERICAN ARTISAN and Hardware Record

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THERE IS NOTHING new under the sun. All that is, has been. Only the combinations of things are new, not the substance. This accounts for the repetition of ideas under varying forms. Thoughts and the words which express them are as old as the brain of man. Indeed, they would be unintelligible in any speech if the counterpart of their substance was not present in every mind. But thoughts do not always lead to action. Therefore, it becomes necessary to use an intellectual ignition system to communicate to the mixture of words and ideas under the compression of the will power the spark which releases their energy in work. This is the function of the trade journal. It is the ignition system of business.

Means of Education in Selling.

If a man's wife tells him that he is handsome, he attributes her praise to the partiality of affection. If other men, however, assure him that he is endowed with talent and capable of big things, he is stimulated to greater effort and ambition. Similarly, if the service of the trade journal as a means of education in the processes of merchandising is explained by the trade journal itself, the merchant or manufacturer is likely to think that it contains exaggerations due to self-interest.

Therefore, there is good sense in reproducing here the reasoning of a famous banker who counseled a hardware dealer to hire competent specialists to conduct the different departments of his store. When the dealer complained that he could not afford the expense of such employes, the banker showed him how he could procure the services of these experts at a cost per year of less than one day's wages.

My dear fellow, he said, don't you realize that the experience of the brainiest men in the business world has been reduced to a matter of paper and ink?

What man has done is a matter of record. His failures, his successes, his experiences, his discoveries he has put on paper. These experiences cover every State—every country and town—while your personal experienec has never crawled over the boundary of the town of your birth.

Take your own trade paper. What does it mean to you? Do you know how to read it? Do you know what it is? A magazine? Yes, it is merely a magazine to the man who does not use it. It is very much like a mirror held up to the entire hardware field, in which he can see at a glance what the world is doing—not in one town, but in store and factory the world over.

It is a sales manager, handing him weekly a written report of the most efficient and effective selling methods, selling ideas, and sales management. It is a sales manager that never sleeps—an employe that works everywhere and is always on the job.

It is an advertising manager, a credit manager, an agent helping him to find and train employes. It is a market barometer forecasting storms—predicting prosperity. It is a secretary that sorts the best from every line of activity and picks out the big news items and brings them to his desk. In fact, no secretary could equal that service at ten times his salary and at a thousand times the subscription price and get the news so accurately, so promptly, and half so interestingly presented. Did you every get that slant on the situation, my friend? Your trade journal is departmentalized and covers every phase of your business. You can turn to any department and get in a few words and fewer minutes' information that you could not get personally in a year. And all this information is the *sifted gold of a thousand dealers' experiences.* Do you use it? If you did, every issue would come to you like an army of experts.

Because I am a banker and have no direct interest in hardware, don't discount what I am telling you. We bankers do other things than count change. If we did not a wooden Indian could *hold* down my job as efficiently as I do myself. We get that broad outside angle that you fellows with your noses down to your desks very often miss.

THE RATIO OF rent and advertising to sales forms the subject of an interesting questionnaire issued by the Taxation Committee of the National Building Managers' and Owners' Association. The answers disclose the fact that there is little difference in what large retail stores in the principal cities of the country pay out as rentals. The concerns that furnished the figures are capitalized at $500,000 or more and have annual sales exceeding $1,500,000.

Rental And Advertising In Selling.

One store in Washington pays but 1.31 per cent, although another in the same city is paying 3 per cent on sales. Tacoma has a store paying only 1.77 per cent and another whose rental amounts to 3 per cent of the sales. Minneapolis furnishes an instance where it costs one establishment but 1.5 per cent of sales and another 4 per cent. The highest amount paid out in rent percentage given is 5 per cent paid by one store in San Francisco and another in Los Angeles.

A store in Buffalo, however, pays the least in both rent and advertising, the former being 0.88 per cent

and the latter 1.08 per cent. The highest percentage on sales paid out for advertising is in the case of a Toledo store, whose appropriation amounts to 5 per cent of the sales. The rent item averages a little over 2½ per cent on sales, and advertising expenses about 2 per cent.

Lesson Of Statistics.

THE VALUE OF statistics consists chiefly in their interpretation. The trained statistician is a scientist whose deductions are formed in accordance with accurate principles. Consequently there is good reason for emphasizing the importance of the statements of Royal Meeker, Commissioner of Labor Statistics and head of the bureau which gathers information on the trend of prices for government use. He declares that there is no prospect of any considerable fall in prices for several years.

"People generally are yearning so intently for lower prices that they have not thought much about the results of falling prices," Mr. Meeker said. "The prices we kicked about in 1913 have come to be regarded as ideal. Untold distress has been caused by the rapid increases of the last four years. The sufferings already endured by the people through rising prices will be multiplied tenfold if prices drop within the next seven years to the 1913 level. A period of falling prices is always a time of business depression, failures and unemployment."

"The normal, seasonal drop in prices may be expected in 1920," Mr. Meeker continued. "In normal times, the low price level for all commodities combined comes in March, April or May. These seasonal price changes are relatively small and will have but little effect upon the housewives' expenditures. No great and sudden fall in prices seems possible for a long time."

In the light of these considerations, it is a matter of simple common sense to arrange one's purchases of stock with a view to supplying the needs of one's customers and enlarging the scope of one's trade rather than in the hope of gaining advantage from a reduction of prices. The lesson of the past year and the forecast for the present year combine to teach the retail merchant the advisability of getting his orders placed far enough ahead of probable deliveries to avoid shortage of stock which spells loss of profit.

Function of The Jobber

TO EVERY NEW generation it is necessary to prove that the sun is the center of our solar system. Truth once established is not self-propagating. It needs to be proved again and again, as it is presented for the first time to minds unfamiliar with its elements. Indeed, we are so constituted mentally that our strongest impressions grow faint and dim with the passing of time. They need to be revived by repetition. This is true even of basic principles whether of ethics or of business. Man becomes an easy prey to fallacy when he allows his convictions to weaken from neglect. This accounts for the comparatively small difficulty which faddists and doctrinaires encounter in foisting their vagaries upon the people. Thus they are able to obtain an audience of no small proportions for their rantings against established truths. An example is available in the present agitation of the people against the middleman or jobber.

It is surprising to learn how many persons there are who have a fundamentally false conception of the function of the wholesale distributor. Even among otherwise well informed merchants the doubt frequently insinuates itself as to the indispensable character of the jobber. Thus it becomes needful to set forth anew the facts in trade journals and national conventions of business men. The subject received clever treatment in an exceptionally enlightening explanation by Doctor Lewis H. Haney, Director and Chief Economist of the Bureau of Research and Publicity of the Southern Wholesale Grocers' Association, in an address delivered recently before the Woman's Club of Jacksonville, Florida.

Dr. Haney said that the manufacturer takes raw materials and changes their form. He takes a chunk of pig iron and moves the molecules around so as to make them in the form of a frying pan. This is what the economist calls adding form utility. The merchandiser takes the frying pan and moves it from one place to another, holding it from one time to another. This is what the economist calls adding place and time utility. You can not use the frying pan in the manufacturer's hands, and you don't want one right now. It has to be changed from Pittsburgh to Jacksonville, and held in storage until you do want it. Both kinds of production are absolutely necessary. We must have raw materials changed in form; we must also have them changed in place and time. The middlemen, to act between the manufacturer and the consumer, is just as essential as the water-works system between the spring and the house.

In a percentage of cases the jobber finances both the manufacturer and the retailer. This function is closely connected with the storage or warehousing functions. Many a canner, for example, could not go ahead with the season's pack unless he was assured of the immediate sale of his output. The manufacturer, you will understand, does not as a rule, know the details of marketing, and does not care to use the capital required to distribute his products. The jobber comes along and takes that work off his hands, which is in accord with specialization and efficiency. On the other hand, the retailer is dependent on the jobber financially. The jobber extends credit to him very generally, but above all, it is by carrying stock of various products which the retailer required that the jobber assists him. This reduces the amount of capital that the retailer has to have locked up in his business. He can write or wire in to the jobber for a small quantity of whatever he may need and receive it as promptly as railway service permits.

An instructive comparison is used by Dr. Haney. He declares that the jobber is like the transmission of an automobile. No one would think of connecting the rear wheels up directly with the crank shaft or the motor. We must have gears and universal joints to transmit the power from the motor and a smooth and elastic way to the rear wheels. To put it in another way, as already suggested, the jobber is like a water distributing plant. If every manufacturer were to

attempt to deal with every consumer, you can see what an impossible situation we would have. It would be something like what would happen if every household would attempt to have a direct pipe connected with the well or spring from which the city's water was obtained. Instead of making such direct connection, with the impossible network of pipes and confusion of lines which would arise, we have established a pumping station, a reservoir, a system of mains, laterals, and small pipes, entering each house from a convenient lateral pipe. In just the same way, the jobber with the help of the broker, combined the products of perhaps five thousand manufacturers in one reservoir, saving enormously in the cost of transportation by buying in carload quantities, and thus provided a stock upon which each consumer can draw through the mains and lateral pipes furnished by the jobbers' distributing system and the retailer.

RANDOM NOTES AND SKETCHES.

By Sidney Arnold.

Books multiply faster than the most assiduous reader can peruse them. Wherefore, it becomes necessary to choose books which yield the most value for the time spent in reading them. One of such books is the new edition of George Lincoln Walton's *Why Worry?* Here are some of the things you will find in its pages:

"The insistent thought magnifies by concentration of attention, and by repetition, the origin of the worry. If my thoughts dwell on my desire for an automobile this subject finally excludes all others, and the automobile becomes, for the time being, the most important thing in the world, hence I worry. If now, I have trained myself to concentrate my attention elsewhere before such thoughts become coercive, the automobile quickly assumes its proper relation to other things and there is no occasion for worry.

"Take a somewhat more serious question. I fear I may make a blunder. If I harbor the thought, my mind is so filled with the disastrous consequences of the possible blunder that I finally either abandon the undertaking or approach it with a trepidation that invites failure. If, on the other hand, I have learned to say that even if I make a blunder it will only add to my experience, then apply myself, whole-minded, to the task, I have a direct attack on worry.

"If one will cultivate this frame of mind, he will be surprised to find that a certain physical relief will follow.

"If we will, we can select our thoughts as we do our companions."

* * *

Charlie (alias "Farmer" Chancellor) is now very careful about who shaves him. He had a colored barber manipulate his face at Shreveport, Louisiana, and he contracted erysipelas in the face and as a result he hovered between life and death at a local hospital in Shreveport before he was taken home. Charlie is now back at the office and is doing his accustomed work, but he wears a skull cap because one of the effects of his 106 degrees of fever is, that he is bald.

* * *

Within certain limits, contentment with one's lot in life is desirable, says my friend George T. Bailey of the Oliver Iron and Steel Company, Pittsburgh, Pennsylvania. He illustrates the statement with this tale:

A darky running a ferry across the Alabama River was accosted by a poor white stranger who wanted to cross but hadn't the wherewithal.

Pete scratched his woolly poll, perplexedly, then queried: "Doan' yo' got no money at all?"

"No," was the dejected reply.

"But it doan' cost yo' but three cents ter cross," insisted Pete.

"I know, but I hain't got three cents."

After a final thought, Pete remarked: "I done tell yo' what; a man what's not got three cents am jes' as well off on dis side ob de ribber as on de odder!"

* * *

George Harms of F. Meyer and Brother Company, Peoria, Illinois, remarks that there are more ways than one to obtain one's desires. Some of them, he says, are wasteful or not worth the trouble. He explains with this story:

Jean longed for a kitten. When illness made it necessary for Jean to go to the hospital, her mother said:

"I will make a bargain with you, Jean. If you will be a brave little girl about your operation, you shall have the nicest kitten I find."

Jean took the ether, but later, as she was recovering from the anesthetic, she realized how very wretched she felt. The nurse leaned over to catch her first spoken word.

"What a bum way to get a cat!" moaned the child.

* * *

My friend Fred Muzzy of Springfield, Massachusetts, heard a woman ask a tramp:

"Aren't you the same man I gave a mince pie to last week?"

"No, I'm not," bitterly replied the tramp, "and wot's more, the doctor says I never will be."

* * *

In these days of theories and formulas, it is appropriate to reprint a recipe—not for mince meat pie, or a league of nations—which is easy to follow and certain to bring desirable results. Culinary recipes are, by common consent, within the province of women, but under the new impulses of feminism women are displaying their talents in other departments. Thus we have a woman's recipe for success written by Anna M. Pratt:

A Recipe for Success.

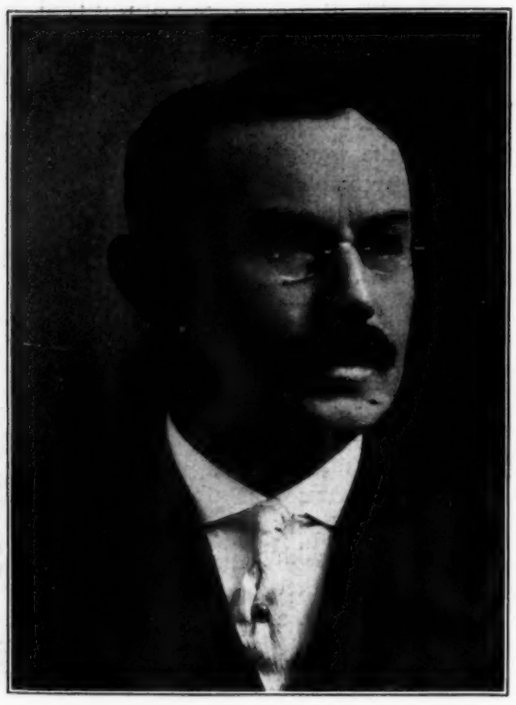
Take energy and patience,
  And mix them well together,
With plenty of good nature
  That laughs in cloudy weather.
Add earnestness of purpose
  In everything you plan,
And much determination
  To do the best you can.
Do this with conscientious care,
  And I think that you'll confess
You've never found a better rule
  For making true success.

AMERICAN ARTISAN

ALBERT GERDUM.

Quoting from a wise predecessor, the ancient Roman orator and statesman, Cicero, declared that "he who civilly shows the way to one who has missed it, is as one who has lighted another's lamp from his own lamp. It none the less gives light to himself when it burns for the other." This virtue of helpfulness, which spends itself without undergoing any abatement of its energy, is the index to the personality of Albert Gerdum, vice-president of both the Walworth Run Foundry Company and the Forest City Foundry and Manufacturing Company of Cleveland, Ohio. Those who know him well can enumerate many instances in which he has lighted another's lamp from his own lamp—and has done it civilly and with a sense of good fellowship.

Some men go through life without learning that the most gainful development of one's powers is through service to others. Civilization is so organized that we can not exercise our abilities to our own benefit except through the social medium. Marconi's studies in and invention of wireless telegraphy, for example, could not bring him any advantage unless others made use of them and adopted his system as a means of communication. The fame which he has won and the wealth which he has earned would not have come to him had he kept the result of his discoveries and experiments to himself.



What is true of so notable a thing as wireless telegraphy may be predicated of the less spectacular and more ordinary affairs of commerce and industry. So intricate is the network of business and so interdependent are its various branches that it may be compared to the nervous system of the human body. No nerve works alone or can perform its functions independently of the other nerves. All operate through the central mechanism of the brain. If a particular nerve becomes disconnected, disorder ensues and, perhaps, bankruptcy of that part of the body whose business it helps carry on. So, too, if a merchant or manufacturer dissociates himself from the general service of society in the making or merchandising of warm air heaters or any other needful commodity which he produces or distributes, he loses power and profit and works damage to himself as well as to his neighbor. Instead of lighting another's lamp, he lets his own grow dim or extinguished.

Albert Gerdum was happy in getting a clear notion of these truths during the formative years of his career. Indeed, he had instructive glimpses of them in the classes of the business college which he attended in Cleveland, Ohio, in which city he was born September 16, 1858. Time and time again he saw them exemplified in the scale making trade which he learned and followed for fourteen years.

He had an opportunity to make his knowledge of that trade widely useful to the people of his native city in 1882 and 1883, when he served with conscientious efficiency as sealer of weights and measures for the municipality of Cleveland. He then worked for three and a half years as scale inspector for the Big Four Railroad Company and made a record for accuracy and honesty to which he has a right to point with pride after the lapse of more than thirty years.

In 1890 he formed a connection with the Forest City Foundry and Manufacturing Company of Cleveland, Ohio, and devoted himself to the task of mastering the business of warm air heaters and registers. He spent thirteen years with that company and acquired a high degree of proficiency in every detail of the manufacture and marketing of its products. He neglected no means of improving and enhancing the service which is the biggest factor in the prosperity of Forest City Foundry and Manufacturing Company. In 1903 he went over to the Walworth Run Foundry Company of Cleveland and is now vice-president of both the Walworth Run Foundry Company and the Forest City Foundry and Manufacturing Company.

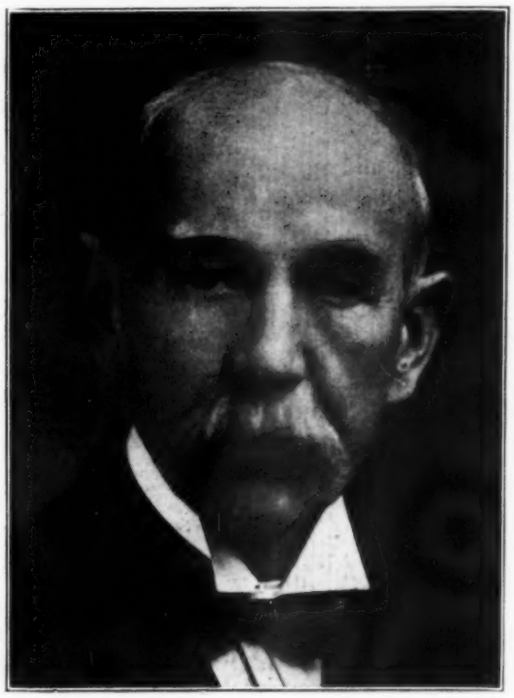
Albert Gerdum is Past Master of the Blue Lodge and Past High Priest of the Masonic Chapter. He is also a Knight of Pythias. He holds membership in the Chamber of Commerce of Cleveland as well as in the Cleveland Chamber of Industries. He is an enthusiastic fisherman and has a summer cottage on Georgian Bay in Canada, where he gives full sway to his fondness for gardening and floriculture. He has friends in all walks of life.

HALL OF FAME

FRED J. MEYERS.

The leading independent manufacturer of steel in America is a man who thinks and plans in terms of millions. He has fought his way to the front rank of industry against tremendous odds. What he has to say, therefore, about the requisites of success in business is of more than common significance. The man to whom reference is made is Charles M. Schwab, made doubly famous during the war by his work with the United States Shipbuilding Corporation. He declares that there are qualities which go to make a man really successful. He enumerates them as follows:

"A man must have personality. That is very important. He must have industry, application, and common sense. No man can do much if he has not been endowed with a reasonable amount of brains. He must earn a reputation for unimpeachable integrity. He must tell the absolute truth. He must cultivate good fellowship. He must be a man whom other men like and trust. Optimism, cheerfulness, readiness to encourage and inspire others also help. Any man can learn to do anything that any other man has done if he will apply himself to the doing of it."



Here we have the specifications, as it were, in a few, brief sentences. They are easy to understand. No one will deny that they are reasonable. They constitute an acceptable standard wherewith to measure character and achievement. Judged by this test, it may truly be said that success, moral as well as industrial, has distinguished the career of Fred J. Meyers, President and General Manager of the Fred J. Meyers Manufacturing Company, Hamilton, Ohio. It is well to observe that in Schwab's conception of it success is not merely a matter of piling up dollars in the bank. Indeed, its most important element is wealth of an entirely different kind. It consists in the acquisition and development of ethical values. In fact, it may be affirmed that the latter are the factors deserving the most consideration.

A man must have personality to succeed. Fred J. Meyers is well endowed in this respect. It is strongly in evidence at every stage in his progress through life from his boyhood days in Cincinnati, Ohio, where he was born March 28, 1845. He attended the parochial school in Covington, Kentucky, across the river from his native city. But, as he himself phrases it, he received his most valuable education in "the school of hard knocks." That is an institution which numbers no mollycoddles among its pupils.

According to the Charles M. Schwab's formula for success, a man "must have industry, application, and common sense." Fred J. Meyers possesses these indispensable qualities in ample degree. He is and always has been industrious. He never evades responsibility nor shirks the smallest detail of his work. He has the quality of application—which is another way of saying that he knows how to apply his efforts in the best way. Thus he exercises the faculty of concentration and avoids waste of energy. He is abundantly supplied with common sense. In other words, he never loses sight of fundamental principles in his dealings with other men and in the management of his business. Even the most exacting critic would freely concede that he is endowed with a reasonable amount of brains. The most convincing proof of this is the business which he has built up in Hamilton, Ohio, whither he moved from Covington, Kentucky, March 11, 1894. His Company is the sole owner of Hunter's famous brands of sifters and manufactures wire goods of every description.

Fred J. Meyers has earned a reputation for unimpeachable integrity and he is a man whom other men like and trust because he cultivates good fellowship in all his business and personal relations. Nor is he lacking in the other qualities which Schwab enumerates as making a man really successful. That is, he is optimistic, cheerful, and ready to encourage and inspire others. These are qualities for which he is conspicuous in the Business Men's Club of Hamilton, Ohio, and as Treasurer of the Ornamental Iron and Bronze Manufacturers' Association of the United States.

He has never had time for a variety of recreations. His chief diversion is in driving an automobile. He enjoys smoking with a zest which would delight anyone but a rabid reformer. Nevertheless, he is temperate in all his habits and exceptionally vigorous in thought and action.

UP TO THE MINUTE NEWS SIFTINGS

STOVE MAKERS MEET WITH OTHERS TO CONSIDER THE NATURAL GAS SITUATION.

Measures were discussed for economizing the natural gas resources of the country in a meeting at Washington, D. C., Thursday, January 15, 1920, which convened at the earnest request of Franklin Lane, Secretary of the Interior. Stove manufacturers were specially invited to attend the conference, as indicated in the subjoined letter.

DEPARTMENT OF THE INTERIOR, WASHINGTON.

Dear Sir: The natural-gas situation is acute. As there are over 2,400,000 domestic natural-gas consumers, the national aspect is obvious. Domestic consumers waste more than 80 per cent of the gas received. The efficiency of most domestic appliances can be trebled so as to make one foot of gas do the work of three.

To consider solutions of this problem, I have called a public conference of Governors, Public Utility Commissioners, State Geologists, home economic experts, natural-gas companies, owners and officials, and appliance manufacturers, in the Auditorium of the new Interior Building at F and 18th Streets, Washington, D. C., at 11:00 o'clock, Thursday, January 15. The purpose of this conference is to consider particularly possible economies in gas utilization and the mutual interests of the public and the gas companies.

It is all-important that the public and the gas companies understand each other, and I, therefore, urge the attendance of yourself and any others that you may wish to bring with you to this conference.

Very truly yours, FRANKLIN LANE.

RECEIVER WILL SELL STOVE AND HEATER BUSINESS.

The business, good will, stock, and equipment, of A. T. Nye and Son, Columbus, Ohio, stove and heater manufacturers, which is now in the hands of a receiver, will be sold at an early date. Charles H. Chaplin is the receiver and has completed the filing of his appraisal of the assets. An opportunity for the acquisition of an unusually good bargain is available for someone in the stove or warm air heater trade in the disposal of the A. T. Nye and Son's business.

PRODUCES FIRST-CLASS PATTERNS.

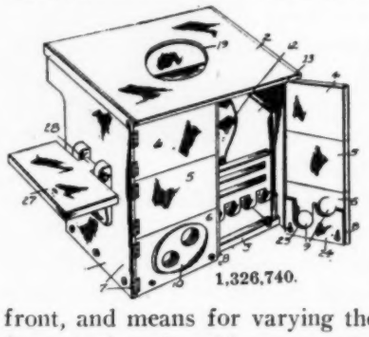
First-class iron or wood stove and warm air heater patterns are made by the Vedder Pattern Works, Troy, New York. Since the year 1835 this company has been supplying stove manufacturers with stove patterns of many varieties. When the progress of the stove trade demanded a betterment in the production of patterns the Vedder Pattern Works was always quick to respond. Today they are equipped to meet the needs for the most advanced types of stove and heating plant patterns. The materials used by this company are of the best. The workmen employed are skilled in the efficient production of stove and warm air heater patterns. Whether the pattern required be made in wood or iron the details are executed with accuracy. To obtain information relative to the stove and heating plant patterns manufactured by the Vedder Pattern Works, Troy, New York, write to them.

ITS STOVE TRIMMINGS ARE LUSTROUS.

Stoves, besides being good heaters, should be ornamental. A roughly finished product, no matter what its capabilities, is not apt to gain the favor a similar product neatly designed would obtain. Stove trimmings of lustrous beauty can be furnished by The Fanner Manufacturing Company, Cleveland, Ohio. Neatness in design is a characteristic of the stove trimmings supplied by the Fanner Manufacturing Company. Among the ornamental stove trimmings made by this company which have gained favor in the trade are pokers, lifters, turnkeys, handles, scrapers, shakers, corners, brackets, rings, edges, strips, chaplets, malleable castings, etc. A letter addressed to The Fanner Manufacturing Company, Cleveland, Ohio, pertaining to its products, will be promptly answered.

OBTAINS PATENT FOR A STOVE.

Stuart Alexander Jones, Bessemer, Alabama, has obtained United States patent rights under number 1,326,740 for a stove described as follows:


1,326,740.

A stove comprising a casing adapted to be placed within a fireplace opening upon the hearth, said casing having a grate and a draft opening at its rear and top and having doors closing its front, and means for varying the height of the grate from the hearth, said means comprising plates slidably connected with the ends and the back of the casing and with the lowermost doors, and means in connection with the plates, the casing and the doors for securing the plates in adjusted position.

Don't waste money by running poor ads in your local papers. Tune them up so that they will interest the public. Perhaps we can show you how. Send in a few of your ads and we'll be glad to review them.

THE WEEK'S HARDWARE RECORD

Of Interest to Manufacturer, Jobber and Retailer

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing western hardware and metal prices corrected weekly. You will find these on pages 44 to 49 inclusive.

The Saiter Morgan's Company, Vincennes, Indiana. hardware, has increased its capital stock from $50,000 to $100,000.

IS PROMOTED FOR PUTTING PLANT ON DIVIDEND PAYING BASIS.

An encouraging example of reward for services performed is given in the promotion of Clarence C. Keehn of Canandaigua, New York, to the position of president and treasurer of the Lisk Manufacturing Company of that city. He succeeds Peter A. Vay of Rochester, New York, who has been president of the Company for years. Mr. Vay becomes chairman of the board of directors.

The Lisk Manufacturing Company makes roasters and tinware. Mr. Keehn's promotion comes to him as a reward for his work in putting the Lisk plant on a dividend-paying basis. Before his promotion, he held the title of general manager and he will continue to act in that capacity.

NAIL SHORTAGE IS ACUTE IN EAST.

Reports from the East indicate an acute shortage of nails of all sizes and varieties. In Buffalo, New York, building is said to be hampered by this shortage and by the difficulty of securing ample supplies of other hardware. A prominent dealer is quoted as declaring that the shortage of builders' hardware in Buffalo, New York, and the surrounding cities is worse than it has been for years. It is almost impossible to secure eight penny, ten penny and twenty penny nails. The shortage is due partly to the steel prices, in a measure to the coal strike, and principally to the unusual demand which has been in force during the past year.

PREDICTS ADVANCE IN SCREEN PRICES.

The handicap of car shortage and the difficulty of securing a sufficiency of raw materials are seriously affecting production and distribution of screen goods In a letter to the trade, the Continental Company of Detroit, Michigan, calls the attention of dealers to the advance in prices which is sure to follow the scarcity of supplies. The company states that it is unable to make contracts for lumber at any price and is compelled to buy in small lots wherever it can secure them. In view of these conditions, the Continental Company urges dealers to put its recently suggested retail prices into effect at once. The company argues that it would be foolish for the dealer to sacrifice the screens which he now has on hand or has ordered when he can not replace them (if at all) except at advanced prices based on the present cost of lumber and labor.

PLANS ARE COMPLETED FOR LARGE ADDITION TO PLANT.

In order to provide for its constantly expanding business the Richards-Wilcox Manufacturing Company, Aurora, Illinois, has completed plans for a large addition to its plant. The new buildings are to be of steel construction, monitor type, and the walls are to be eighteen to twenty feet high in the side bay and twenty feet high in the center bay. The main building is to be 361x112 feet. It will be used for heavy assembly work and will be equipped with the Richards-Wilcox Monorail System for that purpose. Another building 52x320 feet is intended for steel storage. The buildings are to be connected with the old plant on both sides and to have access to a railroad spur coming from the Company's own side track. Great care has been taken to provide a maximum amount of light throughout the buildings and to provide accommodations of the most modern kind for the comfort and welfare of the employes. The new structures will increase the total floor space of the Richards-Wilcox Manufacturing Company's plant about 33⅓ per cent. The plans have been designed with exceptional care and cleverness by Frank D. Chase, Incorporated, 645 North Michigan Avenue, Chicago, Illinois.

INVITATIONS ANNOUNCE MARRIAGE.

Invitations to the wedding of John Waldo Pitkin and Miss Lillian Mae Buthman are being sent out. The ceremony will take place at St. Patrick's Cathedral, New Orleans. Mr. Pitkin is the son of Waldo M. Pitkin, General Manager for A. Baldwin Sons, Hardware Jobbers, New Orleans, Louisiana.

ADVANCE IN COST RAISES PRICES.

Sargent and Company, New Haven, Connecticut, manufacturers of hardware, give out the information that they have withdrawn all prices and outstanding quotations on builders' and miscellaneous shelf hardware. Increase in cost of materials, labor and other things entering into the manufacture of these goods is the reason given for the advance in prices. Sargent and Company declare that they will soon issue new prices which, they state, it is hoped, will be maintained without making any further general advance for the remainder of the current quarter at least.

Lessons are not all learned from books.

ALL DEALERS HAVE MATERIAL TO WIN IN AMERICAN ARTISAN WINDOW DISPLAY COMPETITION.

You have a show window. You have goods you wish to sell; and you have—at least—average ability to make a window display. In short, you have all the material required to win a prize—even the first prize—in the Window Display Competition conducted by AMERICAN ARTISAN AND HARDWARE RECORD. To combine the facilities and skill you have is all that is necessary to accomplish a prize window exhibit. However, at this stage of the contest there is an additional requisite levied on participants—that they lose not one minute in beginning to plan their window arrangement. The time left in which you can enter your displays is short. But do not rush. The best can not be done with the materials you have on hand in a hurry. Study your show space and the form of exhibit you wish to compare with other hardware retailers. Plan your work deliberately. Then follow your layout in the actual work. Rearrange the goods you have selected for the display until you are entirely satisfied that you have produced a display in accordance with your best ability. Do not hesitate to photograph it because of the unfounded fear that "maybe you won't win." Think *positively*. Your chances of winning are on par with each and every participant. There may be a *uniqueness* about your individual arrangement which may win the unanimous opinion from the judges that it far surpasses anything they have yet seen. To determine whether you will or will not win there is but one course open. That is, enter your display without any further loss of time. Put it to an actual test. Or, if you do not have the time to spend in creating an exhibit, give the task to one of your clerks. It will increase his interest in the business. He will do his best in order to show his ability. Now, read the following rules governing the contest. They are simple:

Award of Prizes.

The prizes will be awarded as follows:

First prize $50.00 in cash, for the best photograph and description received of window display of hardware or kindred lines;

Second prize, $25.00 in cash, for the photograph and description second in merit;

Third prize, $15.00 in cash, for the photograph and description third in order of excellence;

Fourth prize, $10.00 in cash, for the photograph and description fourth in degree of worthiness.

Conditions of Competition.

The conditions of the competition are as follows:

The photograph must be accompanied by descriptions of how the window displays were arranged and the materials used. The description is important and hence should be adequate. These photographs and descriptions may be sent by mail or express, charges prepaid, and must reach this office not later than February 2, 1920. Address all photographs and descriptions to AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition, 620 South Michigan Avenue, Chicago, Illinois.

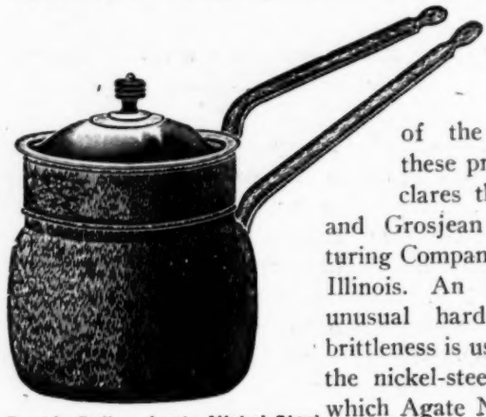
Each photograph and description must be signed by a fictitious name or device and the same name or device must be put in a sealed envelope containing the real name and address of the contestant. This sealed envelope is to be enclosed with the photograph. Contestants are permitted to enter as many photographs of displays as they please.

A Competition Committee of three will be appointed. One of them will be an expert window dresser and one an experienced hardware man. This Committee will pass upon the merits of all photographs and descriptions received, without knowing the names or addresses of the senders, and will decide the winners of the Competition.

AMERICAN ARTISAN AND HARDWARE RECORD reserves the right to publish all photographs and descriptions submitted.

SOUNDNESS MAKES ITS REPUTATION.

The Agate Nickel Steel Ware has built up a national reputation for durability which is due to the soundness of the make of these products, declares the Lalance and Grosjean Manufacturing Company, Chicago, Illinois. An enamel of unusual hardness and brittleness is used to glaze the nickel-steel metal of which Agate Nickel-Steel Ware is made. In the illustration herewith is shown a Double Boiler, Agate Nickel Steel Ware, manufactured by the Lalance and Grosjean Manufacturing Company. This utensil has an uncommonly large capacity and can be employed for many kinds of culinary work. All Agate Nickel-Steel Ware is double coated with a hard vitreous covering and presents a smooth, highly polished and beautifully mottled gray surface. It is said that due to its distinctive composition the enamel will not chip or crack. Because of its lasting qualities and neat appearance, this line of utensils has gained a reputation as being a standard make. Agate Nickel-Steel Ware is uniform throughout. The smoothness and hardness of the enamel coating does not vary. Many dealers have found this make of products a profitable stock to handle. Hardware merchants desiring prices and catalogue should write to the Lalance and Grosjean Manufacturing Company, 1900 South Clark Street, Chicago, Illinois.



Double Boiler, Agate Nickel Steel Ware, Made by the Lalance and Grosjean Manufacturing Company, Chicago, Illinois.

ISSUES NEAT SHOVEL CATALOGUE.

Shovels of every description are depicted in the neatly arranged catalogue issued by the Baldwin Tool Works, Parkersburg, West Virginia. To the hardware dealer this booklet will prove a means of guidance in selecting the proper stock of shovels for his store. Each shovel listed in this catalogue is illus-

trated. A general description accompanied by a tabulation of the measurements of the various shovels pictured is contained therein. It is significant to note that the motto of the Baldwin Tool Works is: *Not How Cheap But How Good.* For a manufacturer to adopt such a slogan and live up to it, is evidence of sound production and praiseworthy service.

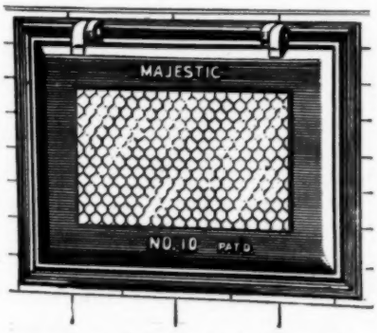
Illustrative of the entire make of Baldwin Shovels is the "Optimus." This is an all-around shovel. In every detail its construction is strong. Shovels for particular sorts of work are designed most efficiently to meet the requirements expected of them. Dealers can obtain a copy of the Baldwin catalogue by writing to the Baldwin Tool Works, Parkersburg, West Virginia.

BULLARD AND GORMLEY WILL MOVE TO A NEW LOCATION.

The building at present occupied by Bullard and Gormley Company, wholesale hardware dealers at 7 to 9 East Lake Street, Chicago, Illinois, is about to be torn down to make room for a great motion picture theater. Therefore, the Bullard and Gormley Company will move to 54-62 East Lake Street. The New location will afford ample quarters for the large and constantly growing business of Bullard and Gormley Company. The building is 50x160 feet and Bullard and Gormley Company will occupy five stories and the basement. The prompt service and maintenance of high standards of qualities for which Bullard and Gormley Company has earned a well deserved reputation will continue to characterize its business in the new location.

COAL CHUTE IS EASY TO SELL.

That an efficient and properly constructed coal chute has been an acute need for a long time will be agreed to by dealers in builders' hardware. The makeshift devices that have been contrived to meet the need of a coal chute have been found, in many instances, wasteful. They were not particularly adapted to the work for which they were used. Building owners have repeatedly deplored the expense attendant upon the repairs of the opening in their property through which coal was unloaded. To the purchaser of the fuel they mean a wastage of coal and a mixture of extraneous matter due to the inconveniences in the transferring of the coal from the vehicle in which it was delivered to the basement. But that time is past.



Number 10 Majestic Coal Chute, Made by The Majestic Company, Huntington, Indiana.

Illustrated herewith is a coal chute manufactured by The Majestic Company, Huntington, Indiana, which is so constructed that it precisely answers the need oft expressed by building owners. The Majestic Coal Chutes are made of carefully selected materials. In form they are fitted for the unloading of coal. Fuel can be thrown into the building through these chutes without any damage resulting to the building. When the door of the Majestic Chute is opened it affords an ideal opening for the admittance of fuel into a building. These chutes can be unlocked from the inside. They are locked automatically with the Majestic Gravity Latch. The many sizes of coal chutes manufactured by this company afford dealers a wide scope to supply the various requirements likely to be met. Write to The Majestic Company, 105 Erie Street, Huntington, Indiana, for booklet picturing and describing the entire line of Majestic Coal Chutes.

NEATNESS WELCOMES CUSTOMERS.

Just the very appearance of the store interior may extend the welcome your store should make to every customer. Whether he is a new one or one who has found your treatment such as to warrant a return to your store a pleasure makes no difference. The customer should breathe in the atmosphere of the store interior that "come-again" attitude which is associated with profitable business.

DISTRIBUTES ATTRACTIVE CALENDAR.

A large calendar with the figures printed in a manner which makes them easy to read at a glance, is being distributed by The Wellston Manufacturing Company, Wellston, Ohio. This company manufactures Eclipse Steel Sectional Ball Bearing Devices for bolts and nails. Dealers desiring a copy of the calendar should write to The Wellston Manufacturing Company, Wellston, Ohio.

WILL HOLD ITS YEARLY MEETING.

Notice has been sent out to the policy holders of the Hardware Dealers Mutual Fire Insurance Company of Wisconsin that the regular annual meeting of the company will be held in the Auditorium, Milwaukee, Wisconsin, Wednesday, February 4, 1920. The sessions will begin at 10:00 o'clock in the morning. Officers for the ensuing term are to be elected. Matters relating to the welfare and protection of the members will be discussed and plans formulated for increasing the number of policy holders among the hardware dealers of the state. P. J. Jacobs, secretary of the Wisconsin Retail Hardware Association, is also secretary of the Hardware Dealers Mutual Fire Insurance Company of Wisconsin.

SALESMANSHIP IS SOCIAL NEED.

In the dictionary, business is defined as the supplying of commodities for the well-being of mankind. Therefore, business men are salesmen. No matter what we are doing, whether we are selling the world our goods, our services, pictures, personalities, or what not, we are selling to the world something. Therefore, salesmanship is the fundamental principle in all human relations.

PROGRAM OUTLINES ACTIVITIES OF ANNUAL CONVENTION.

In the program of the Eighteenth Annual Convention of the Mountain States Hardware and Implement Association to be held at the Brown Palace Hotel, Denver, Colorado, January 20, 21, 22, 1920, there is much that will delight and instruct the members of this organization who contemplate attending. Herewith is appended the program:

Tuesday, January 20th.

8:30 a. m.—Reception to members and guests at H. I. P. Club Headquarters.

Registration of members and guests, payment of dues and issuing of membership cards and drawing numbers for State Seals at secretary's office.

9:45 a. m. Convention Hall.

Call to Order. President George Morhart.

Invocation.

President's Message.

Address. "The Other Blade of Grass," President J. M. Campbell, National Retail Hardware Association.

Report of Secretary and Treasurer W. W. McAllister.

Appointment of Committees.

11:45 a. m.—Closed session. For members of The Mountain States Hardware and Implement Association only.

12:00 m.—Adjournment.

Afternoon program to be announced at convention.

8:00 p. m. Convention Hall.

Entertainment and a general good time for members and guests. Open to all, bring your hardware and implement friends.

Wednesday, January 21, 1920.

8:00 a. m.—H. I. P. Club headquarters, open to members and guests.

Call to order.

Address. "Is the Implement Dealer Measuring Up to Expectations As a Seller of Tractors and Power Farm Machinery?" Delegate from The National Vehicle and Implement Association.

Discussion.

Address. "What Are the Manufacturers Doing to Assist the Dealer to Promote the Sale of His Goods?" Charles H. Wohrer.

Discussion.

As these discussions are expected to bring out many points of benefit to dealers the Question Box will be dispensed with at this session.

Afternoon and evening have been left open to allow members and guests an opportunity to attend the Stock Show.

Thursday, January 22nd, 8:00 A. M.

H. I. P. Club Headquarters open to members and guests.

9:45 a. m. Convention Hall.

Call to order.

Address. "You and Your Business," Secretary-Treasurer Herbert P. Sheets, National Retail Hardware Association.

Report of Committees.

Drawing for hardware displays, Seals of States Colorado, Wyoming and New Mexico, donated to the association by Simmons Hardware Company.

Inter-Church World Movement of North America Its purposes, plans and program. Defined by a member of that body.

11:30 a. m.—Question Box.

12:00 m.—Adjournment.

Evening—Guests of the H. I. P. Club. Entertainment, Banquet and Dance at El Jebel Temple.

HARDWARE CLUB OF CHICAGO IS TO HAVE DINNER AND DANCE.

The Entertainment Committee of the Hardware Club of Chicago, consisting of Henry A. Squibbs and John S. Kandy, has arranged a dinner, dance, and musical program for Saturday evening, January 17, 1920, in the Club Rooms, eleventh floor, State and Lake Building, Southwest corner Lake and State Streets, Chicago, Illinois. The dinner will begin promptly at 6:30 p. m., and a complete orchestra will entertain the members and their guests during the entire evening. An exceptionally attractive musical program has been compiled, and every effort will be made to render the occasion one long to be remembered.

IS BUILT FOR LONG AND HEAVY WEAR.

The rough wear to which boys subject their toys demands that such articles be built of the strongest materials — if they are to last and give satisfaction. In the illustrations herewith are shown the Junior Roadster, Convertible, made by the Buffalo Sled Company, North Tonawanda, New York. This wagon is made with the same care and skill which enter into the manufacture of the products of the Buffalo Sled Company. The materials are chosen only after exacting tests. The wheels are equipped with Bessemer steel bearings, insuring long wear. This line of roadsters has very neat finish. Being convertible, this wagon can be changed from a roadster to a coaster. No mechanical ability is required to make the change. Any boy at will can change the roadster to a coaster.

Junior Roadster Convertible, Made by the Buffalo Sled Company, North Tonawanda, New York.

Showing Box of Junior Roadster Changed to Coaster.

Besides the sound build of the products of the Buf-

falo Sled Company, there is a natural feature which goes to make products of this type easily salable. Boys admire good things. When one has an article which affords him much pleasure and satisfaction, such as a Buffalo Junior Roadster, Convertible, his playmates envy him. That in itself is an advertisement. The poster service of the Buffalo Sled Company also materially aids in the sales of its goods. Dealers desiring information pertaining to a cooperative advertising campaign conducted in their interest, and those requiring details concerning this line of products, should write to the Buffalo Sled Company, North Tonawanda, New York.

IS PREPARING A SPECIAL BOOKLET FOR THE HARDWARE TRADE.

The National City Bank of New York is preparing a special booklet dealing with America's foreign trade in hardware, a copy of which is to be presented to each visitor at the Pennsylvania and Atlantic Seaboard Hardware Association Convention to be held in Philadelphia, February 10, 11, 12, and 13, 1920. The booklet is being written by Oscar P. Austin, the Bank's statistician, and contains, aside from an analysis of this country's foreign trade in hardware, a valuable series of tables showing what countries consume the greater part of our hardware exports, for what articles foreign demand is increasing, for what ones this demand is decreasing, and the value of the many items of hardware we send into foreign markets each year.

The Bank will be pleased to send a copy of this booklet to any hardware dealer or manufacturer who does not have an opportunity to secure one at the Philadelphia Convention of the Pennsylvania and Atlantic Seaboard Hardware Association.

OBITUARY.

Lemuel M. Bushnell.

A life well spent and rich in good deeds came to an end with the passing away of Lemuel M. Bushnell, at the age of seventy-six years in Belleair, Florida, Saturday, January 10, 1920. He left his home in Chicago just a week before his death and was stricken with pneumonia when he reached Florida.

At the time of the great Chicago Fire, in 1871, he became associated with Alexander Vaughan in the manufacture of hardware, and the business became known as the Vaughan and Bushnell Manufacturing Company. Upon the death of Alexander Vaughan, Mr. Bushnell became president of the company. He continued in that office until about six years ago, when he retired from active service and was succeeded by Sanford S. Vaughan, who now holds the position of president of the Vaughan and Bushnell Manufacturing Company.

Mr. Bushnell was a member of the Union League Club, Glenview Golf Club, and the South Shore Country Club, all of Chicago, Illinois. He made his home at the South Shore Country Club and took a keen interest in the athletic development of that organization He was noted for his commercial ability as well as for the goodness of his disposition and the intense loyalty of his friendships. He is survived by his widow Margaret Bushnell, and one son, Charles E. Bushnell.

W. M. Dillon.

One of the pioneer manufacturers of barbed wire departed from this life in the person of W. M. Dillon, Sterling, Illinois, who died Monday, January 12, 1920. He was president of the Northwestern Barbed Wire Company, of Sterling, Illinois, which he established in 1878. He is survived by his widow and four children, namely, John and Paul Dillon of Sterling, Illinois, Mrs. Wild of Sycamore, Illinois, and Mrs. Eshelman of Lancaster, Pennsylvania.

Charles B. Newman.

The funeral of Charles B. Newman, late of the Joseph T. Ryerson and Son's St. Louis, Missouri, office took place Thursday, January 15, 1920, from his late residence, 1617 South Millard Avenue, Chicago, Illinois, to Blessed Sacrament Church, where the services were held. He is survived by his parents, John W. and Mary Newman, his brother, Walter J. Newman, and two sisters, namely, Helen C. Newman, and Mrs. John R. McCabe.

OPPORTUNITIES FOR FOREIGN TRADE PRESENTED BY BUREAU OF FOREIGN AND DOMESTIC COMMERCE.

The Bureau of Foreign and Domestic Commerce, through its Special Agents, Consular Officers and Commercial Attachés, is receiving information of opportunities to sell hardware and kindred lines in several foreign countries. Names and locations will be supplied on request to the Bureau in Washington or its District Offices. Such requests should be made on separate sheets for each opportunity, stating the number as given herewith:

31718.—A commercial agent from Argentina is now in the United States and desires to secure agencies for the sale in the River Plate countries of hardware, paints, wire, etc. Reference.

31719.—A department in one of the nations of the former Austrian Empire desires to purchase asbestos, copper and zinc. Payment in French or United States currency. Correspondence may be in English.

31720.—A technical engineer from Norway is in the United States and desires to secure agencies for the sale of all kinds of metals, hardware, and all other articles of a technical nature. Reference.

31721.—An electrical supply company in China desires to purchase hardware and enamel ware. Quotations should be given c. i. f. Tientsin. Payment, cash against documents in Tientsin. Reference.

31725.—A merchant in France desires to purchase and secure an agency for the sale of hay forks with and without handles. Quotations should be given c. i. f. French port. Payment by 30 days' sight draft. Correspondence should be in French. Reference.

31737.—A commercial traveler who has represented an American firm in Spain and Portugal is about to return to Spain, and desires to secure an agency for the sale of iron and steel products, labor-saving devices, roofing material, etc. Quotations should be given c. i. f. Spanish port. References.

31746.—A firm of commercial representatives in Chile desires to secure agencies for the sale of goods for American manufacturers. Correspondence should be in Spanish or French. Reference.

31708.—A firm of American importers established in Siberia are about to ship from the United States a cargo of small tools and agricultural implements, and would like to secure agencies from manufacturers of such goods.

31709.—An agency is desired by a man in Italy for the sale of automobiles and accessories, etc. Correspondence should be in Italian or French. Reference

31711.—The director of a trading syndicate in India desires to purchase and secure an agency for the sale of wire ropes, wires, and equipment for drilling and pumping water. Quotations should be given c. i. f. port of India. Reference.

31728.—An agent and factory representative in Spain desires to receive from manufacturers quotations on brass wire from 1 to 10 millimeters in diameter, and brass and copper sheathing, dimensions of which may be obtained upon request for this opportunity number. References.

31729.—An engineer from Sweden who is in the United States desires to secure agencies for the sale of automobiles and accessories, refrigerating machines, electrical goods, and hardware. References.

31758.—The representative of an import firm in Australia desires to secure agencies on commission from manufacturers for the sale of bolts and nuts, and enameled kitchen utensils. References.

31764.—A grocery importer in New Zealand desires to purchase and secure an agency for the sale of enamelware, aluminumware, kitchen and utensils. Quotations should be given f. o. b. American port. Payment, cash against documents. References.

COMING CONVENTIONS.

Mountain States Hardware and Implement Dealers' Association, Denver, Colo., January 20, 21 and 22, 1920. W. W. McAllister, Secretary, Boulder, Colo.

Texas Hardware and Implement Association, Dallas, Texas, January 20, 21 and 22, 1920. A. M. Cox, Secretary, 1808 Main Street, Dallas, Texas.

Pacific Northwest Hardware and Implement Association. Davenport Hotel, Spokane, Washington, January 20, 21, 22 and 23, 1920. E. E. Lucas, Secretary, Hutton Building, Spokane, Washington.

American Washing Machine Manufacturers' Association, Hotel Sherman, Chicago, Illinois, January 21 and 22, 1920. Raymond Marsh, Secretary, 10 South La Salle Street, Chicago, Illinois.

The American Society of Heating and Ventilating Engineers, New York City, January 27, 28, and 29, 1920. C. W. Obert, Secretary, 29 West 39th Street, New York City.

Indiana Retail Hardware Association, Athenaeum Hall, Indianapolis, Indiana, January 27, 28, 29, and 30, 1920. Exhibit in same hall. G. F. Sheely, Secretary, Argos, Indiana.

Oregon Retail Hardware and Implement Dealers' Association, Imperial Hotel, Portland, Oregon, January 27, 28, 29 and 30, 1920. E. E. Lucas, Secretary, Hutton Building, Spokane, Washington.

Kentucky Hardware and Implement Dealers' Association, the Armory, Louisville, Kentucky, January 27, 28, 29 and 30, 1920. Hardware, Implement, and Vehicle exhibit. J. M. Stone, Secretary, Sturgis, Kentucky.

West Virginia Retail Hardware Association, Wheeling, West Virginia, February 3, 4 and 5, 1920. John H. Morgan, Secretary, Morgantown, West Virginia.

Nebraska Retail Hardware Association, Lincoln, Nebraska, February 3, 4, 5, 6, 1920. Nathan Roberts, Secretary, Lincoln, Nebraska.

Wisconsin Retail Hardware Association, Milwaukee, Wisconsin, February 4, 5, and 6, 1920. P. J. Jacobs, Secretary, Stevens Point, Wisconsin.

Iowa Retail Hardware Association, Auditorium, Des Moines, Iowa, February 10, 11, 12 and 13, 1920. A. R. Sale, Secretary, Mason City, Iowa.

Michigan Retail Hardware Association, Hotel Pantlind, Grand Rapids, Michigan, February 10, 11, 12 and 13, 1920. Exhibit in Furniture Exhibition Building. Arthur J. Scott, Secretary, Marine City, Michigan.

Pennsylvania and Atlantic Seaboard Hardware Association, Bellevue Stratford Hotel, Philadelphia, Pennsylvania. February 10, 11, 12, and 13, 1920. Exhibition in Philadelphia Commercial Museum. Sharon E. Jones, Secretary, 1314 Fulton Building, Pittsburgh, Pennsylvania.

North Dakota Retail Hardware Association. Grand Forks, North Dakota, February 11, 12 and 13, 1920. Hardware exhibit in Grand Forks Municipal Auditorium. C. N Barnes, Secretary, Grand Forks, North Dakota.

Illinois Retail Hardware Association, Hotel Sherman Chicago, Illinois, February 17, 18, and 19, 1920. Exhibit in connection. Leon D. Nish, Secretary, Elgin, Illinois.

Minnesota Retail Hardware Association, St. Paul Auditorium, St. Paul, Minnesota, February 17, 18, 19 and 20, 1920 H. O. Roberts, Secretary, 1030 Metropolitan Life Building, Minneapolis, Minnesota.

New York State Retail Hardware Association, Onondaga Hotel, Syracuse, New York, February 17, 18, 19 and 20, 1920. Exhibition in State Armory. John B. Foley, Secretary, 607 City Bank Building, New York City.

Missouri Retail Hardware Association, St. Joseph Auditorium, St. Joseph, Missouri, February 17, 18, and 19, 1920. F. X. Becherer, Secretary, 5136 North Broadway, St. Louis, Missouri.

New England Hardware Dealers' Association, Mechanics' Building, Boston, Massachusetts, February 23, 24, and 25, 1920. George A. Fiel, Secretary, 10 High Street, Boston, Massachusetts.

South Dakota Retail Hardware Association, Sioux Falls, South Dakota, February 24, 25, 26, and 27, 1920. Exhibit in connection. H. O. Roberts, Secretary, Metropolitan Life Building, Minneapolis, Minnesota.

Virginia Retail Hardware Association, Murphy's Hotel, Richmond, Virginia, February 25, 26 and 27, 1920. Thomas B. Howell, Secretary, Richmond, Virginia.

Ohio Hardware Association, Hotel Gibson, Cincinnati, Ohio, February 24, 25, 26 and 27, 1920. James B. Carson. Secretary, Dayton, Ohio.

Michigan Sheet Metal Contractors' Association, Saginaw, Michigan, March 2, 3, and 4, 1920. F. E. Ederle, Secretary. Grand Rapids, Michigan.

National Warm Air Heating and Ventilating Association. Cleveland Hotel, Cleveland, Ohio, April 21, 1920. Allen Williams, secretary, Columbia Building, Columbus, Ohio.

Southeastern Retail Hardware and Implement Association, embracing Alabama, Florida, Tennessee, and Georgia State Retail Hardware Associations, Atlanta, Georgia, May 4, 5, 6, and 7, 1920. Walter Harlan, Secretary, 701 Grand Theater Building, Atlanta, Georgia.

Stove Founders' National Defense Association, Boston, Massachusetts, May 11, 1920. R. W. Sloan, Secretary, 826 Connell Building, Scranton, Pennsylvania.

Hardware Association of the Carolinas, Imperial Hotel, Greenville, South Carolina, May 11, 12, 13 and 14, 1920. T. W. Dixon, Secretary, Charlotte, North Carolina.

Southern Hardware Jobbers' Association, Marlborough-Blenheim Hotel, Atlantic City, New Jersey, May 11, 12, 13, and 14, 1920. John Donnan, Secretary, Richmond, Virginia.

American Hardware Manufacturers' Association, Marlborough-Blenheim Hotel, Atlantic City, New Jersey, May 11, 12, 13, and 14, 1920. F. D. Mitchell, Secretary, 4106 Woolworth Building, New York City.

Old Guard Southern Hardware Salesmen's Association, Marlborough-Blenheim Hotel, Atlantic City, New Jersey, May 12, 1920. R. P. Boyd, Secretary, Knoxville, Tennessee.

National Association of Stove Manufacturers, Boston, Massachusetts, May 12 and 13, 1920. Robert S. Wood, Secretary, National State Bank Building, Troy, New York.

National Association of Sheet Metal Contractors, Peoria, Illinois, June 8, 9 and 10, 1920. Edwin L. Seabrook, Secretary, 261 South Fourth Street, Philadelphia, Pennsylvania.

RETAIL HARDWARE DOINGS.

Illinois.

Oscar Baker, Earl Smith and William Unland have purchased the Wolfel and Grandlach hardware store at Lincoln.

Indiana.

The Miller Hardware and Furniture Company at Sullivan will dissolve.

Kansas.

L. E. Marsh has bought a hardware store at Furley.

Minnesota.

C. Neuschwander has sold his hardware store at Foxhome to B. Ehlert.

Nebraska.

J. G. Puckett has bought a hardware store at Atlanta.

W. J. Walker has sold his hardware store at Lynch to G. R. Heim.

North Dakota.

The Mitchell Company has purchased the Bjornstad and Son hardware business at Ellendale.

Pennsylvania.

W. U. Baker has opened a hardware store at Fredericktown.

South Dakota.

William Zink and Sons have taken over the Wessington Springs Hardware and Implement Company at Wessington Springs.

Tennessee.

Will and Sam Giffee will open a hardware and implement business at Brownsville.

Texas.

The Prewitt Hardware Company at Taylor has changed its name to The Taylor Hardware Company.

Washington.

W. H. Richardson and H. I. Monks have purchased the hardware business of Thompson and Son at Harrington.

Wisconsin.

E. A. Plisch has sold his hardware business at Aniwa to the Mattson Hardware Company.

Fred R. Struble, proprietor of the Phillips Hardware Company at Phillips, has sold his business to B. W. Malm and Joe Kolar.

ADVERTISING CRITICISM AND COMMENT

Helpful Hints for the Advertisement Writer

A strong example of effective advertising cooperation with dealers is shown in the advertisement of the Continental Company, Detroit, Michigan, which appeared in the *Chicago Tribune,* Chicago, Illinois, and other leading daily papers. It would be hard to devise

Fresh Air Without Drafts, Dust, Rain or Snow
Continental
Fresh Air Window-Ventilators
For Bed Rooms, Living Rooms, Bath Rooms, Offices, School Rooms, Hospitals, etc.
Continental Sanitary Cloth Window Ventilators supply an abundance of fresh air, without dangerous drafts, dust or dirt.
Strongly made of selected hard wood and fine mesh, specially treated, buff-colored cotton cloth.
Demand the Genuine Continental Ventilators
Adjustable—Fit Any Window—Installed in a Minute
THE CONTINENTAL CO., Book Bldg., Detroit, Mich.
Sold by Hardware, Housefurnishing and Department Stores

better or more convincing copy than that which constitutes this advertisement. Its appeal is direct, forceful and practical. "Fresh air without drafts, dust, rain or snow" tells the whole story and leaves no room for indecision or wavering of desire on the part of the prospective customer.

* * *

There are so many publications nowadays and so much to read that it is doubtful whether or not the average sportsman will pay attention to so small an

USE THE
BLACK SHELL
(Made by the U. S. Cartridge Co.)
THERE IS NONE BETTER.
We have the Black Shell In All Loads.
White Hardware Co.
25 Congress St. W.

advertisement as that of the White Hardware Company which was published in the *Savannah Press,* Savannah, Georgia. It has to compete for notice with bigger advertisements of an almost bewildering variety of commodities in a daily newspaper. This, of course, would not be the case if it were published in a journal devoted exclusively to hunting and trapshooting.

There is not much room in the advertisement of Babcock, Hinds, and Underwood which appeared in the *Binghamton Press,* Binghamton, New York.

Radiant Fire
The beautiful fireplace fixture that heats with gas.
Babcock, Hinds & Underwood
HARDWARE
174 Washington St. 125 State St.

Therefore, the text could not be elaborated to any considerable extent. Nevertheless, it has sufficient space —without crowding— for a few more words which would give an idea of the price and usefulness of the article advertised. Instead of the adjective "beautiful," for example, "cosy," or "comfort-giving," or "plenty of heat," etc., could be used to better advantage.

* * *

The three groups of articles set forth in the advertisement of the Comstock-Castle Stove Company, which appeared in the *Quincy Daily Journal,* Quincy, Illinois, are presented to the prospective buyer in a

manner clear from confusion or distraction. Each group is fairly well illustrated. Prices are printed in plain, unmistakable figures. There is not an unnecessary word in the whole advertisement. Yet, it gives a clear idea of the articles to the reader.

* * *

The first thing that a good advertisement provides for is being noticed in the very first word. People can not be expected to go back and wonder what it was. A good advertisement must attack and overwhelm and hold voluntarily the attention of people.

HEATING AND VENTILATING

COVERS MANY INTERESTING TOPICS IN SCIENTIFIC TREATISE ON HYGIENE AND VENTILATION.

PART II.

(Concluded from January 10, 1920.)

It is enough here to state that the weight of water vapor held in each cubic metre of air is at 32 degrees Fahrenheit 5 grams, at 60 degrees Fahrenheit 13 grams, and at 100 degrees Fahrenheit 45 grams; a meter of cool air breathed and saturated at body temperature in the lungs will carry away far more water than a meter of warm humid air. The respiratory membrane keeps itself warm in the face of the cooling and evaporative power of the air by the flow of arterial blood and secretion. Walking exercise increases the breathing volume some five times, and the flow of blood and secretion through the membrane proportionately. The amount of blood and secretion flowing through the respiratory membrane of a man camping out in the open and taking hard exercise is, then, far greater, perhaps ten times more, than in the case of a sedentary indoor worker. The flow of blood and secretion keeps the membrane clean and healthy.

A fine spray is explosively scattered out in speaking, sneezing and coughing, but not in quiet breathing. This spray carries the infection of respiratory disease yards around. The danger zone for guinea pigs placed near coughing consumptives is about one meter, and the danger is intensified by the closing of doors and windows. Infection is also spread by dust from soiled handkerchiefs, clothes and skin. Crowding intensifies the massiveness of the dose.

Eight million people live in one to three-room tenements; the railways omnibuses, trams, tea-shops and cinemas are crowded and offer endless chances of massive infection; while the defensive mechanism is hampered by the bad effects of warm stagnant air on the respiratory membrane. Colds, bronchitis and consumption are thus prevalent and exact a terrible toll on national health. Inasmuch as such colds are the fruit of indoor conditions of life, not of outdoor cold, as generally supposed, it is manifestly of the highest importance that in the new housing schemes the most careful attention shall be given to securing, by the right choice of heating and ventilating systems, that while the occupants of a room are adequately and comfortably warmed in winter the air shall always be kept cool and moving—the two conditions essential to a healthy atmosphere.

We have seen that one of the chief dangers of close air is its lack of adequate cooling and evaporative powers, and this is a matter in regard to which I have undertaken a great deal of research. The ordinary dry bulb thermometer fails to show the cooling power of the air exerted on the human body. It is a static instrument, while the human body is a dynamic machine, producing heat and requiring to be cool and kept at body temperature. I have therefore introduced an instrument, the kata thermometer, by means of which there can be measured both the cooling and the evaporative powers of the air exerted on the surface at body temperature, the measurment being expressed in units of heat-loss per square centimeter of surface per second. The kata thermometer is a large bulbed spirit thermometer of standard size and shape graduated between one hundred degrees Fahrenheit and ninety-five degrees Fahrenheit. The bulb is heated in water until the meniscus rises well above the one hundred degrees Fahrenheit.

It is then wiped dry, and the rate of cooling from one hundred degrees Fahrenheit to ninety-five degrees Fahrenheit is taken with a stop watch. Two or three such readings are taken and the average number of these in seconds is divided into a factor, which is determined for each instrument and marked on the stem. The cooling power of the dry kata is thus obtained in millicalories (one one-thousandths gram calaries) per square centimeters per second. The operation is repeated with a wet muslin fingerstall covering the bulb, and the cooling power of the wet kata obtained. The dry kata gives the cooling by convection and radiation, the wet kata by convection, radiation and evaporation; the difference between the two gives the cooling by evaporation. The dry kata thermometer is indicative of the cooling power of the air exerted on the dry skin; the wet kata thermometer of the cooling power of the air exerted on the moist skin (sweating) and on the respiratory membrane.

A very extensive series of observations has shown me that the dry and wet kata cooling powers in our rooms, offices and workshops commonly approximate to outdoor conditions in spots in the shade and exposed to wind in humid tropical climates admittedly enervating to man. In rooms comfortable for sedentary work, the dry kata thermometer cooling power averages about six and the wet kata thermometer about eighteen—twenty. The monthly mean readings in Sierra Leone taken out of doors in the wind and shade are higher, for example, for the dry kata thermometer seven—twelve. On the other hand out of doors and with the full exposure to wind in Britain the monthly mean readings are far higher, for example, for the dry kata thermometer over twenty in summer and over forty in winter. The conditions to which shepherds, fishermen, agricultural laborers, and all hardy outdoor workers are exposed are then vastly different from the greenhouse conditions of factories and the stagnant conditions of tenements under which industrials work.

An inquiry which I have made into heat production of adults sitting quietly out of doors in ordinary cloth-

ing shows that the cooling power of the atmosphere on cold breezy days increases this one hundred per cent and even two hundred per cent. The increased heat loss from the surface of the body impels the body to burn up more food and to breathe more deeply to secure the requisite oxygen.

This is the most important action of the open air; it urges us to activity and blows up the fire of life which indoor conditions choke.

In close rooms and workshops the dry kata thermometer reading may be as low as three—four, the wet kata thermometer twelve—fifteen. Every worker is liable to leave a close, warm humid factory with a flushed, sweating face.

In investigating such atmospheres I pay great attention to the surface temperature of the cheeks of the workers. I take this by passing a small bulbed thermometer to and fro over the cheek. Out of doors on bracing days the cheek temperature may be as low as twenty degrees Centigrade. In these close factories it may be thirty-four—thirty-five degrees Centergrade.

To investigate the effect of any source of radiant heat, such as furnaces, machines, etc., I take the surface temperature of a piece of black fur, and see the difference between this and the air temperature. In the July sun the difference may be thirty-five degrees Centigrade. The fur absorbs radiant heat as the skin and clothes do, and is a most valuable indicator.

I now propose to put forward a few constructive suggestions based on the results of my investigations.

First and foremost, adequate cooling and evaporative powers must be secured to maintain comfort and good hygiene, in summer and in winter alike. It is not feasible to cool the naturally over-heated air in summer, or to dry it when excessively humid. Buildings thrown open to the wind and fans afford the means of overcoming the discomfort and dangers of hot weather. When the dry bulb temperature even approximates to or is above body temperature, so long as the wet bulb temperature is well below it, the free evaporation of sweat in a current of air will keep the body cool. Under such conditions, the air must not be stagnant, or the wet bulb will approximate to body temperature in the proximity of the skin, and evaporation will become difficult and great discomfort and danger of heat stroke arise.

If the wet bulb temperature of the air rises to body temperature, our means of maintaining heat loss by fans are gone. Fortunately, such a condition is very rare and never occurs in this climate. In the tropics the wet bulb thermometer is a much better indicator of comfort than the dry bulb. In hot climates thick-walled stone chambers with windows shut during the heat of the day afford a refuge. The body can give up its heat by radiation to the walls, and the walls keep cool the contained air. If a man's sweating mechanism becomes fatigued and ceases to act in hot dry weather, he is in imminent danger of a heat stroke, a danger which can be very easily repelled by spraying his clothing with water and blowing upon him with fans. The fans or punkah make indoor life possible to the European in the tropics, and fans require to be used in all theatres, meeting-houses, schools and workshops, wherein in this country conditions resembling a tropical climate are only too common.

The avoidance of over-warm moist temperatures in winter is no easy thing. Accurate control is required to meet the rapidly changing conditions of this climate. It must ever be borne in mind that the presence of people in a room may provide quite enough heat to keep it warm; for example, as Professor Barker points out, ten persons in a room of 2,500 cubic feet will keep the room warm without artificial heat, even in the depth of winter, and after allowing for a certain amount of ventilation. The natural method of keeping warm in the wild state is to huddle together in a sheltered place.

Heat, then, may only be required to warm up the walls of a room before it is occupied, so that the radiating units can then be shut off. Skilled control is most urgently needed. Few, however, realize the importance of this. Fearful of the smell of a drain which does no harm, people are careless of close, stagnant atmospheric conditions which destroy their health.

As a matter of fact the heating and ventilating systems are the most important part of a building, for on them depend health and efficiency; and the architect must so order his plan that they can be introduced in their perfection, not—as has often been the case—as a minor and unimportant accessory, their design crabbed to suit his decorative scheme and to save money. Round the lungs and the circulating system is built the human body; so must the house be built round its ventilating and heat-distributing systems, the two being kept separate, *for air must not be heated to a high temperature.*

In cool air a ventilation of not less than 1,000 cubic feet of air per head per hour is required to carry off the heat and vapor produced by the body and entangled in the clothes, and so prevent blanketing; far more is necessary in conditions of hot weather, for workers engaged in strenuous work, and where the atmosphere is heated by furnaces and machinery. Neither the dry nor the wet bulb thermometer, nor the percentage of carbonic acid in the air, can show whether the conditions are right, but the kata thermometer can do so.

In workrooms the dry kata thermometer cooling power should be kept nearer ten than five, and that of the wet kata thermometer nearer twenty-five than eighteen. People should become used to higher rather than lower cooling powers, and chilly people put on more clothing. The feelings of the foreman who is not doing physical labor should not regulate the cooling power and one old and bronchitic man, or one weakly or anemic girl should not be allowed to control conditions in a factory so as to enervate perhaps too vigorous workers.

The cooling power required by workmen varies with the strenuousness of their toil and the amount of heat production. The efficiency of a man as a machine is about twenty per cent to thirty per cent. Three-quarters of the energy (derived from combustion of food) set free in doing muscular work appears as heat, and this heat must be got rid of. Flushing and sweating are the emergency methods of get-

ting rid of heat. The cooling power should be such as to gainsay the curse "in the sweat of thy face shall thou eat bread." The heat produced by a man doing a good day's labor, says 100,000 kilogram meters of work, may be taken as 3,300 kilogram calories. His skin surface may be estimated by the Du Bois formula:

$$A = W^{0.425} \times H^{0.725} \times 0.007184.$$

A = square meters. W = weight in kilograms. H = height in centimeters.

Suppose the man has a surface of 1.9 square mile and his evaporative heat loss from skin and lungs in cool conditions is 570 calories, I estimate, then, the required rate of heat loss from his skin by convection and radiation to be as follows:

A sleeping period of eight hours at fifty-one calories per hour = 0.74 milli-calories per square centimeter per second.

A sedentary period of six hours at seventy calories per hour = 0.74 milli-calories per square centimeter per second.

A working period of ten hours at 190.5 calories per hour = 2.79 milli-calories per square centimeter per second.

Suppose the man during the sedentary period were in a room where the temperature was eighteen degrees Centigrade and the air still; the dry kata thermometer cooling power is under these conditions five; that is four times the estimated heat loss of the man ($1.2 \times 4 = 5$). Now six is a very common dry kata cooling power in the rooms of sedentary and light workers, and a reading of five or under five is generally associated with c.oseness. I have other evidence which shows that the dry kata thermometer cooling power should be four times that of a man's required rate of heat loss by convection and radiation per square centimeter per second. During the working hours the dry kata thermometer cooling power should then be $2.74 \times 4 = 10$.

There are data which show that for a tailor it should be five, for a bookbinder and shoemaker seven, for a painter, a metal worker, or a carpenter seven-ten, for a stonemason fifteen, and for a man sawing wood eighteen.

I have drawn up a table showing the kata cooling powers at different temperatures both in still air and at certain given velocities of wind.

To secure the required cooling powers and keep down sweating, the tailor will be right in still air at fifteen degrees Centigrade, and at higher, temperatures will require movement of the air, increasing up to one mile an hour at twenty-seven degrees Centigrade.

The carpenter, the metal worker and the painter will be right in still air at five degrees, and need movement of air at higher temperature, increasing to one mile an hour at twenty degrees Centigrade, two miles an hour at twenty-five degrees Centigrade, and nine miles an hour at thirty degrees Centigrade. The stonemason will require some movement of the air even at no degrees Centigrade, and will need one mile an hour at ten degrees Centigrade, two miles an hour at fifteen degrees Centigrade, nine miles an hour at twenty-four degrees Centigrade, and twenty miles an hour at twenty-seven degrees Centigrade.

These are low estimates because the man, owing to his bigger mass, is much more shielded from wind than is the kata. While in still air the kata cools four times as quickly as the man; in wind it may cool from six-twenty times as quickly.

The estimates suffice, however, to show how every necessary it is to secure efficiency by providing adequate cooling powers.

Dry kata cooling power in milli-calories per square centimeter per second.

		Wind.		
Temperature of Air.	Still Air.	0.5 m. per sec. 1.1 m. per hr.	1 m. per sec. 2.2 m. per hr.	4 m. per sec. 8.8 m. per hr.
00	9.8	22.6	27.7	45.6
5	8.5	19.5	25.9	39.4
10	7.1	16.4	20.1	33.1
15	5.8	10.3	16.3	26.8
20	4.4	10.5	12.5	20.6
25	3.1	7.1	8.7	14.3
30	1.7	4.0	4.0	8,1
35	0.4	0.9	1.1	1.9

To secure good conditions in large halls, offices, etc., the outside air (never heated) should be propelled by fans through inlets extending at the eight-foot level all round the walls, the air being extracted through a number of vents in the ceiling by means of an extract fan. Multiple units of radiating surface each with separate control are required to provide heat in cold weather. The units should be small and multiple so that no worker need be unduly heated by proximity to a unit. It is, I recognize, very difficult to heat large offices, factories, etc., by radiant energy, and keep cool moving air circulating through them in ample streams, without inducing unpleasant feelings of draught. An enclosed space is wholly different from the vast, restless atmosphere outside with its ceaseless variations, and it is no easy task to imitate the ideal conditions of a May day, when the sun shines, the ground is warm, and a cool breeze intermittently blows about our heads. It seems feasible, although no effort has yet been made to develop the idea, to utilize radiant heating by gas in the way I have mentioned above—*i. e.*, by placing small units separately controlled in proximity with each worker or group of workers. It would suffice if each worker were provided with a feet-warmer under his control. If the feet are kept warm and the head cool ideal conditions are obtained. I want to see a room so heated, and at the same time abundant cool air circulated through it by inlets all round the walls and outlets in the ceiling, with fans driving in and pulling out—fans capable in hot weather of being reversed so that all can drive in, while windows are all thrown open.

I further want to see the conditions of such a room controlled by a skilled attendant, using as guides in exploring the conditions in which each worker is placed not only the feelings of the workers but also the kata thermometer, the surface temperature of the cheek, and of the black fur. I want to see how efficiency and health are increased by such means, and I am very hopeful of good results. If economy and convenience enforce the use of hot water or steam coils with shut up windows then I say compensation for the hours spent in the workroom must be found in open-air exercise and in sleeping with windows wide open or in sleeping-verandahs. I can not insist too

much on this. Hours require to be shortened, garden cities built, the education of the young in physical exercise enforced, so that compensation is secured for the prevailing indoor conditions. These are the lines of true economy—to save waste and develop power, and with it the health, efficiency and skill of the workers.

It should be here mentioned that in any consideration of factory heating the heat conserving properties of materials used and the methods of construction adopted must be adequately considered. A factory with light roof construction, very large glass surface, and thin wall can not be warmed otherwise in wintry weather than by a vast amount of heating surface and fuel. In summer they heat up as a greenhouse does, enervating the workers. In many factories the amount of heat produced by machinery, lights, furnaces, etc. is so great that adequate cooling is the trouble rather than warming, and loss of heat is an advantage.

I am not dealing with an unknown quantity when I say that I hope to see efficiency increased by proper heating and ventilation. Dr. H. M. Vernon, for instance, estimates that in tinplate factories more efficient ventilation increases output by 12 per cent over less efficient. Personally I believe that really adequate ventilation may make a difference of 25 per cent or more. That it is needed is beyond doubt; in many mines, for example, particularly those of South Africa, conditions are such as are recorded on close, oppressive days in Ceylon or Madras.

It is an interesting fact that into the turbine rooms of the Cunard liners Mr. Keith has introduced "joy wheels," high velocity fans 6 feet in diameter, placed at the bottom of straight air trunks of the same width. The cold outside air sinks down by gravity, and is whirled into the engine rooms, broken up, and impelled in all directions in such fine streams that no draught is felt. The temperature on warm days is thus lowered, from 150 to 70 degrees Fahrenheit, and the relief obtained is betokened by the name given to the fans.

As an example of the economic importance of ventilation, Mr. C. E. A. Winslow (U. S. A.) instances a telephone exchange wherein the installation of a $75 fan system lowered the winter sickness absences from 4.5 per cent to 1.9 per cent.

It will be seen, then, that adequate ventilation is an economic factor of considerable moment, and that too much attention can not be given to it today, when the most pressing need is greater production at less cost in money, time and labor—in a word, increased efficiency, which alone will enable us to pay off our colossal war debt within a reasonable space of time.

It may be well here to set forth a few principles of ventilation, as follows:

Draughts set up by cross currents passing from inlet to outlet; the narrower the area of admission the more pronounced and objectionable being the draught. Windows wide open at the bottom are thus often the best in ordinary rooms.

Windows of workshops and schools should be pivoted vertically, so that they may be fixed open as wind screens and be rotated inwards for cleaning.

A low room is better ventilated than a lofty one, and there is not a scrap of evidence that a room 8 feet high is less healthy than one of 12 feet. Height and cubic content are ridiculous standards. The mouse is as well ventilated and cooled by his skin and lungs as the elephant. The difficulty lies in ventilating rather the big room than the small. Heat is lost by conduction through walls and windows, by interchange of air between inside and outside.

Ventilation depends on wind blowing air in through open windows or through crevices round doors and windows and porous walls, and on hot air rising and cold heavier air sinking inwards. Nothing can stop the gravity change of air set up by temperature difference, except sealing up in air-tight fashion, an extremely difficult thing to do.

Thus in a deep chalk dug-out of 900 cubic feet capacity containing 30 people and 3 candles alight, with all entrances closed by double gas curtains, I found the ventilation on a cold winter's day remain efficient.

There are 500 linear feet of crevices in a Pullman sleeping car, and with all windows and doors shut and 6 exhaust ventilators in the roof actuated by the motion of the train, no less than 40,000 cubic feet of air per hour enter the breathing zone of the car.

In hot weather girl clerks in temporary one-storied buildings faint more often from heat exhaustion in rooms, say, 80 by 70 than in rooms 80 by 20. Workrooms should be made long and narrow to secure enough window and wall ventilation. Houses should not be blanketed with other houses nor with trees and shrubs. The site chosen for new houses should be free and open and not consist of hollows where damp cold air nestles and mists abound.

BUYS ENTIRE BUSINESS OF WARM AIR HEATER REPAIRS.

The entire warm air heater repair business of the John B. Morris Foundry Company, Cincinnati, Ohio, has been purchased by the Central Stove and Furnace Repair Company, 1801 Diversey Parkway, Chicago, Illinois. The transaction included the stock, good-will, records, etc., as well as the patterns, and the entire equipment has been moved to the Chicago headquarters of the Central Stove and Furnace Repair Company, 1801 Diversey Parkway, Chicago, Illinois.

CAN ACQUIRE GREATER CHEERFULNESS.

We can all acquire greater cheerfulness by assuming the right attitude toward our surroundings and circumstances; by looking habitually at the bright side of things; by training ourselves persistently to see the good and pleasant things in our common daily life, and to remember to face the sunshine and the shadows will fall behind.

There are men so profoundly confident of themselves that they say they attach no importance to public opinion, which is a proof that they do not merit its good will.

INCOMPLETENESS CAUSES FAILURE.

Incompleteness, lack of thoroughness, sheer fragmentariness are a prolific source of sorrow and failure. The person who hops about, shifting from one task to another, is necessarily unhappy. He is worried, pre-occupied, overwrought and yet futile, because he has not learned the virtues of system and a set programme.

WILL CONTINUE ESTABLISHED LINES.

An ideal adjustment is secured when a long established firm succeeds to an honestly developed business and continues to maintain the good-will and the respected name of the products whose manufacture it takes over. This highly desirable state of affairs characterizes the Victor Stove Company, Salem, Ohio, in its purchase and continuance of the well-known line of warm air heater patterns formerly owned by the Youngstown Furnace Company, Youngstown, Ohio. The "Lion" and "Apex" are the two widely advertised and conscientiously designed warm air heaters of the Youngstown Furnace Company, which the Victor Stove Company will continue to manufacture for the trade with the same care as to material and quality which was a notable feature of their manufacture by the Youngstown Furnace Company in the past.

The Victor Stove Company, Salem, Ohio, is glad to receive inquiries from dealers and to give them closest attention and prompt answers. For the convenience of patrons in the central west, the Victor Stove Company has a western distributing agency in charge of the Carr Supply Company, 412-414 South Dearborn Street, Chicago, Illinois.

MAKE ALL YOUR SPARE TIME COUNT.

Make even your spare time count. Make a resolve to acquire some new mental timber each day. If you are a little shy of some certain knowledge, make it a point to read up on that subject. Are there details in your work which are obscure to you? Ask questions, find out and see just how you can make yourself more efficient—worth more money.

COAL-SAVING DEVICE IS PRACTICAL.

A device which is said to be a coal saver of unusual practical value is illustrated herewith, made by the Z. T. Soot and Gas Consumer Company, Oshkosh, Wisconsin. The Z. T. Soot and Gas Consumer, as it is called, has been tested under actual conditions and, according to the users, has proved its worth as a coal saver. In construction it is designed to introduce a current of heated air into the burning gases as they arise from the fuel bed. Thus a sufficient supply of oxygen is insured to consume all the carbon in the fuel before the gases cool to the point where this chemical action of combustion will no longer take place.

Z. T. Soot and Gas Consumer, Made by the Z. T. Soot and Gas Consumer Company, Oshkosh, Wisconsin.

With this device the air enters the round opening, where it protrudes through the door of the heater and in traveling back toward the slotted outlet—shown on the inner end—becomes heated. In other words, the part of this device which is directly over the fire bed acts as a heater for the air in passing through it. This consumer is so designed that it helps cause perfect combustion. In that way it consumes the soot and gas which otherwise would accumulate and cause a loss in the amount of heat extracted from the fuel used. An interesting description which completely explains this device and prices thereon can be obtained by writing to the Z. T. Soot and Gas Consumer Company, Oshkosh, Wisconsin.

ANNUAL MEETING OF HEATING AND VENTILATING ENGINEERS HAS A SPECIAL PROGRAM.

Almost equivalent to an intensive course of instruction in the chief subjects of the profession is the program arranged for the twenty-sixth Annual Meeting of the American Society of Heating and Ventilating Engineers, which is to be held in Hotel McAlpin, New York City, January 27, 28, and 29, 1920. A number of special sessions have been decided upon, including one devoted to consideration of the highly important matter of school ventilation in its relation to the desirability of mechanical ventilation equipment. Another very important session will deal with the question of fuel, taking up both oil fuel and pulverized fuel. In addition, there will be meetings devoted to the work of the Research Bureau of the American Society of Heating and Ventilating Engineers, which is located in the United States Bureau of Mines, Pittsburgh, Pennsylvania.

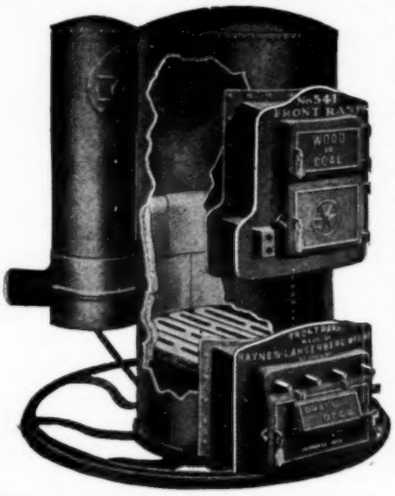
All members planning to attend the Annual Meeting are warned that the hotels of New York City are unusually crowded and that it is urgent to obtain advance reservations at once. It will be advisable to make immediate application for reservations either by letter or wire, direct to the hotel. The Hotel McAlpin will be the headquarters hotel of the meeting and a large number of rooms have been reserved for the accommodation of the membership. In addition, arrangements have been made for accommodations at certain hotels associated with the McAlpin, so that no one applying for reservations at this time may be disappointed.

Any members who experience difficulty in obtaining reservations are urged to report upon the matter at once to Secretary C. W. Obert, 29 West Thirty-ninth street, New York City, in order that every possible assistance may be given.

COMPARATIVE RADIATING SURFACE GOVERNS ECONOMY OF HEAT.

The size of the radiating surface in comparison with the size of fire pot is the determining point in judging the economical value of a warm air heater,

states the Haynes-Langenberg Manufacturing Company, 4058 Forest Park Boulevard, St. Louis, Missouri, makers of the Front Rank Warm Air Heater, depicted herewith. The radiating surface must be arranged so that the air in passing upward will come in close touch with every part of it. The Front Rank Warm Air Heater is built on straight vertical lines. This causes the air in its ascent to come in direct contact with the entire surface, it is said. The drum or fire chamber in this warm air heater is made of a solid sheet of heavy armor plate with but a single seam, closely riveted, making it perfectly gas tight. Heavy cast flanges are placed around the openings—where the smoke passes from the drum into the radiators—to protect the steel. The fire pot is lined with fire clay tiling, which is said to be practically indestructible. Dealers desiring particulars can obtain descriptive literature and other information relating to the Front Rank Warm Air Heater from the Haynes-Langenberg Manufacturing Company, 4058 Forest Park Boulevard, St. Louis, Missouri.



Front Rank Warm Air Heater, Made by the Haynes-Langenberg Manufacturing Company, St. Louis, Missouri.

EFFICIENCY IS FIRST ITEM TO BE CONSIDERED IN ESTIMATING THE CAPACITY OF HEATER.

"One of the first items to be determined in estimating the heating capacity of a warm air heater is its efficiency—that is, the proportion of heat in the coal that may be utilized for warming," states *The Encyclopedia of Engineering*. According to this authority, "The efficiency depends chiefly on the area of the heating surface as compared with the grate, on its character and arrangement, and on the rate of combustion. The rate of combustion required to maintain a temperature of 70 degrees in the house depends, of course, on the outside temperature. In very cold weather a rate of four to five pounds of coal per square foot of grate per hour must be maintained.

"One pound of good anthracite coal will give off about 13,000 British Thermal Units, and a warm air heater should utilize 70 per cent of this heat. The efficiency of an ordinary warm air heater is often much less, sometimes as low as 50 per cent.

"In estimating the required size of a first class warm air heater with good chimney draft, we may safely count upon a minimum of combustion of five pounds of coal per square foot of grate per hour, and by estimating that 8,000 British Thermal Units will be utilized for warming purposes from each pound burned. This quantity corresponds to an efficiency of 60 per cent."

KNOWLEDGE AND WORK BRINGS SUCCESS.

Knowledge harnessed to work spells success. Keep hammering, hammering, hammering. Set your goal, turn your face toward it, and never in any circumstances, no matter how discouraging temporarily, turn your back to it. Expect hardships. Take punishment. Put all you can into life. And do it cheerfully. Keep smiling. And in time you are bound to reap pretty much what you sow.

INSULATES WITH ASBESTOS SHEETS.

Through long observation, careful planning and skillful manufacture, the Magee Furnace Company, 38 Union Street, Boston, Massachusetts, declares that it has evolved a pipeless warm air heater which answers the need for an efficient heating plant. The Magee Pipeless Warm Air Heater, illustrated herewith, is said to be both economical and strongly built. The inner casing in this pipeless warm air heater is made of two sheets of iron with heavy corrugated asbestos paper between them for insulating purposes. In warm air heating, in order to insure vigorous convection, the cold air and warm air compartments must be isolated. That this is provided for in the Magee Pipeless Warm Air Heater is evidenced by the extra precautions taken in having a double inner casing with a sheeting of asbestos paper. The outer casing and supply pipe are made of heavy galvanized iron. Large double feed doors, fire pot, combustion chamber, and revertible flue radiator increase the efficiency of the Magee Pipeless Warm Air Heater. A big water pan, which can be easily filled from the front, is installed in this pipeless warm air heater. The Magee Dock Ash Grate is proportioned in accordance with the size of the fire pot, combustion chamber, and flues. This insures fuel economy, declare the manufacturers. For other details concerning the Magee Pipeless Warm Air Heater dealers should write to the Magee Furnace Company, 38 Union Street, Boston, Massachusetts, or to its Western representative, Robert P. Burton, 30 West Lake Street, Chicago, Illinois.

Magee Pipeless Warm Air Heater, Made by the Magee Furnace Company, Incorporated, Boston, Massachusetts.

CAN NOT STAND STILL IN BUSINESS.

Everything in nature is in motion. Within the tiny cells that in their aggregated millions make up the massive oak, there is an active circulation. Stagnation means death. In all the living universe there is what scientists call the constant whirl of "matter and motion." To business the same rule applies. Dealers can not stand still. They are part of the gigantic mechanism of business—and must move along with it.

Genius is usually frayed at the trousers—mediocrity is run down at the heels; but Success is always well-dressed.—Joseph J. Lamb.

PRACTICAL HELPS FOR THE TINSMITH

PATTERN FOR OCTAGON SKYLIGHT.

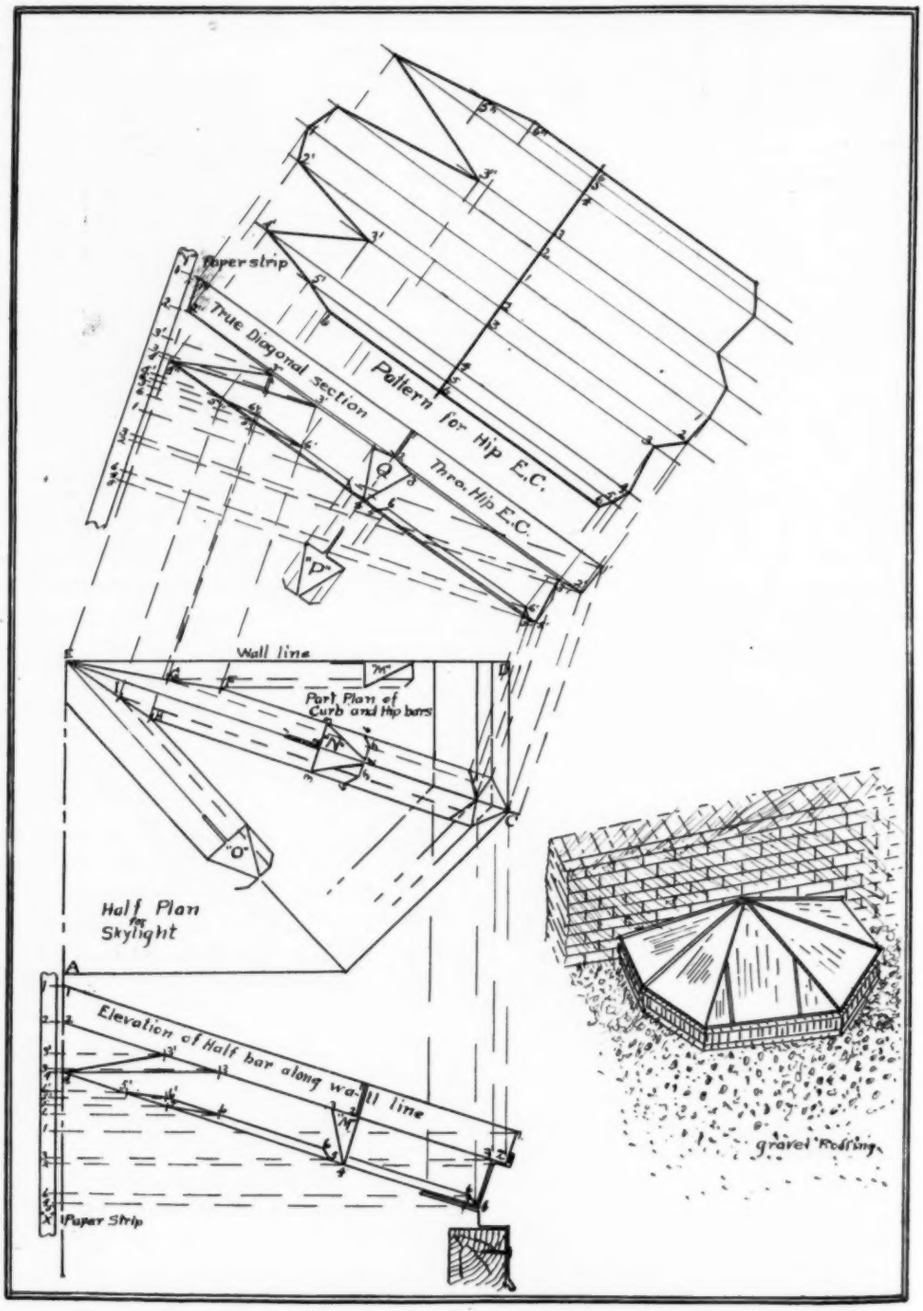
By O. W. Kothe

Our sketch shows a type of hip skylight, met with now and then. It offers an adjustment of position slightly from the square or rectangle type. We first draw the elevation of half bar, making 4-4 to the desired pitch, and drawing section "M" in place so it is at right angles to it. Then extend lines parallel to 4-4 and draw the lower curb. Now draw the half plan, making the outline to suit the curb measurements on roof, and draw the hip lines. On these hip lines draw sections "N"-"M"-"O," which are the same as common bar sections. From each point in section draw lines parallel to hip lines, and this enables us to draw the miter lines at C, also E-F and E-H.

Observe that the plant is a flat view of skylight while our elevation merely gives the length of side bar. But for the hip bars special details must be developed, as these are longer and change in slope in accordance with their length.

So we place a paper strip as at "X" and from each point of curb and miter points 3-3′, also 5-6′, etc., project lines to it as shown. We might add that the latter miter is developed by picking the miter lines E-F; E-G and setting them off as 3′-3′, 3-3, etc., in elevation. Now transfer this paper strip "X" at right angles to hip line E-C as "Y." Then project lines at right angles from it. At the same time square out lines from miters of hip E-C of plan until they intersect those from paper strip of similar number. This gives us points 1″-2″-3″-4″, etc., also 1′-2′-3′, etc. Join these joints with lines and we have the diagonal section.

Observe that if these lines do not run parallel then some error has been made and the layout must be checked over. Reproduce section "N" in the position shown by "P" and develop the true hip section Q. This gives the true angles of hip and also the true girth which is stepped off as 6-1-6 from which the pattern is developed as shown in the drawing.



Pattern for Octagon Skylight.

Every successful business man has been a good advertiser; every good advertiser is a successful business man.—Mahin's Magazine.

ORGANIZES A STATE ASSOCIATION OF SHEET METAL CONTRACTORS IN PENNSYLVANIA.

In response to a call signed by more than one hundred firms of sheet metal contractors a convention was held in the Penn-Harris Hotel, Harrisburg, Pennsylvania, January 8, 1920, for the purpose of organizing a state association. A preliminary conference was held in the Penn-Harris Hotel, Wednesday evening, January 7, 1920, for the purpose of devising means for expediting the work of the convention.

Joseph E. Shank, President of the Harrisburg Local called the convention to order promptly at noon Thursday, January 8th, and cordially welcomed the contractors who had responded to the call. He introduced the Lieutenant Governor of the State, Edward E. Biedleman, whose address entitled, "Why Organize," went straight to the mark. His arguments were both convincing and persuasive, and characterized by practical common sense.

The Committee on Temporary Organization suggested Louis Luckhardt, of Pittsburgh, Chairman, and Edwin L. Seabrook, Philadelphia, for secretary. The chairman appointed committee on by-laws, permanent organization and resolutions.

An address was given on how to organize a local association and make it profitable for the members. Adjournment was taken at one o'clock for luncheon and photographing those in attendance.

At the afternoon session the overhead expense problem, always a lively topic, was discussed. The opening address was made by Louis Luckhardt, and this was followed by a general discussion, which was lively from start to finish.

The committee on by-laws presented its report and the new association starts out with a complete set of by-laws and ready to fulfill its objects.

The committee on permanent organization recommended the following officers which were elected:

President: H. F. BANTHAM, with the B. G. Carpenter Company, Wilkes Barre.

Vice Presidents: H. B. MCCLURE, Harrisburg; C. W. SEXTON, Waynesboro;

Secretary: W. F. ANGERMYER, Pittsburgh;

Treasurer: G. C. KRACK, Erie;

Directors: A. R. HOFFMAN, Sharon; R. S. HAHN, Easton; WALTER H. TINNEY, Philadelphia; WM. COLLAR, New Brighton; JOSEPH URBAN, Reading, and J. I. THOMAS, Lewistown.

The committee on resolutions expressed thanks to the Harrisburg local, the hotel management and to those who had in any way contributed to the formation and success of the new State Association.

The Question Box proved to be one of the most profitable features of the convention, a fire pot being used as the box. A number of questions were put in writing; these covered many phases of the sheet metal business and gave rise to an exchange of opinion.

The convention was a complete success in every respect and a new State Association is added to the National Association. The by-laws provided for membership in the national body. Increase in membership will be the first work taken up by the new officers, and there is every indication that this will meet with big success.

TRADE DEVELOPMENT COMMITTEE OF THE NATIONAL SHEET METAL CONTRACTORS WILL MEET.

In order to increase the scope of its service to the members, the National Association of Sheet Metal Contractors has a Trade Development Committee, whose inspiring slogan is "Use Sheet Metal Everywhere for Everything." P. F. Brandstedt, of Washington, D. C., is Chairman of the Trade Development Committee. He has sent out a call for a meeting of the committee to be held January 19, 1920, at 10:30 a. m. in Hotel Sherman, Chicago, Illinois. Arrangements for the meeting are in charge of David M. Haines, Secretary Chicago Sheet Metal Contractors' Association.

The Trade Development Committee places particular emphasis upon cooperation as of the utmost benefit to everyone connected with the National Association. The Chairman, P. F. Brandstedt, expresses the dominant thought of the committee when he urges: "Let us be big, broad, human beings who do not exploit their ability for only personal gain, but who are willing to see that men who try and who want to do are given a lift." The success of similar trade development committees in other industries warrants the belief that great good will be accomplished for the advancement of the sheet metal contractors who coöperate with the National Association in spreading and putting into practice the slogan: "Use Sheet Metal Everywhere for Everything."

On the same date, namely, January 19, 1920, the Executive Committee of the National Sheet Metal Contractors' Association will also meet in the Sherman Hotel and coöperate with the Trade Development Committee. The effect of the working together of all the national officers of the Association and of the various committees is certain to result in advantage to every sheet metal contractor throughout the United States who is affiliated with the organization and who takes the trouble to avail himself of the helps which the Association places at his disposal.

MILWAUKEE SHEET METAL MEN ELECT OFFICERS FOR THIS YEAR.

The officers elected to administer the affairs of the Master Sheet Metal Contractors' Association of Milwaukee, Wisconsin, for the ensuing year are men who have been actively prominent in the development and services of the Association. At the regular monthly meeting held January 7, 1920, the members showed their appreciation of the good work done by these contractors by choosing them to fill the following offices:

President: O. A. HOFFMAN;
First Vice-President: JOHN GRAF;
Second Vice-President: WILLIAM GALLUM;
Secretary: EDWARD HOFFMANN;
Treasurer: JOSEPH HOLLITZ;
Sergeant at Arms: A. J. SCHUMANN;

Assistant Sergeant at Arms: J. RASCHKA;

Executive Committee: R. JESKE, JACK MILLEN, and J. BARTELSON.

Correspondence was read from Edwin L. Seabrook, Secretary National Association of Sheet Metal Contractors, the Continuation School, the newly formed Pennsylvania Association of Sheet Metal Contractors, the Western Association of Rolled Steel Consumers, and the Retail Credit Men's National Association.

The apprenticeship agreement was thoroughly discussed at the meeting. A motion was made and carried that the Secretary send each member a contract for apprentices and that these contracts be returned to the Association by the members ten days after receipt thereof. Upon the adjournment of the meeting the Entertainment Committee escorted the members down to Miller's Cafe, where a "Tinners' Luncheon" was served amid reminiscences of days when "joy water" was much in evidence.

PHOTOGRAPH SHOWS FAMILIAR FACES.

In the accompanying photograph of the salesmen of the Milwaukee Corrugating Company, Milwaukee, Wisconsin, are faces that will be familiar to the sheet metal and hardware trade, as most of the men in the group have been with the company for a number of years. The picture was taken at the annual Salesmen's Convention at the home office of the Milwaukee Corrugating Company.

Convention Group of Salesmen of the Milwaukee Corrugating Company, Milwaukee, Wisconsin.

Those in the group are as follows: Bottom row—Wood Berlin, salesman; A. J. Luedke, Secretary and Assistant Treasurer; L. F. Gregory, salesman; J. H. Christman, Sales Manager; P. G. Meyer, Order Department; H. H. Seifert, Manager Kansas City branch; J. Scholl, salesman; K. I. Pottenger, salesman; E. H. Jones, Manager Metal Lath Department; A. C. Scheder, salesman; Frank Vyvian, office employe; F. D. Naylor, salesman; O. F. Nelson, salesman; C. F. Nason, salesman; E. J. Ryan, Manager Ventilating Department; C. C. Banholzer, Manager Ceiling Department; W. J. Colwell, Assistant Sales Manager; C. L. Atwood, Advertising Manager.

Second row—C. Willman, salesman; J. H. Riddle, salesman; W. W. Cornelius, Kansas City branch; A. H. Schmelzer, salesman; Edson Perry, salesman; J. G. Holch, salesman; P. D. Shelmire, Minneapolis Representative.

Last row—F. Drews, salesman; F. W. Rockefellow, Order Department; C. W. Kuhl, salesman; D. L. Hood, salesman; P. E. Sauerwein, salesman; Ray Dieterich Architect; E. L. McVicker, salesman; H. P. Shafe., salesman.

The salesmen were given a banquet by the management at the Wisconsin Club the evening of January 7th. The welcoming speech was delivered by Louis Kuehn, President and Treasurer of the Company. A. J. Luedke, Secretary and Assistant Treasurer of the Company, acting as toastmaster, announced the various speeches to be made by the department managers and salesmen. The Reverend Dorward, a local divine, was the leading speaker of the evening. The program contained some of the latest song hits, which were remodeled to fit the occasion, among which were these lines from "Smiles" which reflected the satisfaction of the men in the Company's habit of distributing a Christmas bonus among the salesmen:

"There's a smile that proves me happy—
Shows I'm anything but blue.
There's a smile that predicates expenses
Will be paid, all but a paltry few.
It's a smile that must attract attention—
Smile that August could not help but see.
It's *some* smile, like others I could mention,
When he hands my Christmas check to me."

BECOMES DISTRICT SALES MANAGER.

Announcement is made by the General Sales Department of Whitaker-Glessner Company, Wheeling, West Virginia, that E. B. Pentz has been appointed District Sales Manager of the Company with headquarters in Room 1137, Guardian Building, Cleveland, Ohio. Mr. Pentz is exceptionally well fitted for the position. In addition to his accurate and thorough knowledge of the products of the Whitaker-Glessner Company, Mr. Pentz is gifted with enthusiasm and selling ability in which friendliness and a pleasant disposition are always uppermost.

A MAN WITH BRAINS IS NO GOOSE.

A man with brains is no goose, but brains are the goose that lays the golden eggs. As in eggs we have different grades,—good, middling good, and just eggs, so in brains we have good, middling good, and just brains. Some varieties might be likened to calves'

brains—no sage in them. Often, but not always, the quality of the brains is plainly stamped on the face of the container.

LETS CONTRACT FOR NEW FACTORY IN KANSAS CITY, MISSOURI.

In order to supply the constantly increasing demand for its products in the western territory, the Milwaukee Corrugating Company, Milwaukee, Wisconsin, has completed arrangement for the building of a new factory at Kansas City, Missouri. The new structure is to be of reinforced concrete, fireproof construction, 385 feet long, 160 feet wide, and two stories high, and will cost a quarter of a million dollars. The contract for the new factory stipulates that it must be completed not later than June 1, 1920.

The Milwaukee Corrugating Company now has a warehouse and salesrooms at 911-925 West Eighth Street, Kansas City, Missouri, under the management of H. H. Seifert, formerly of the Milwaukee office. The new factory will greatly increase the firm's facilities. Building products which can be shipped more advantageously from Kansas City are to be manufactured there by the Milwaukee Corrugating Company and its customers in the territory north, west and south of Kansas City will get the benefit of the improved service and reduced freight rates.

WILL HOLD IMPORTANT CONFERENCE.

The manufacturers and jobbers of the Columbus, Ohio, district will hold a community conference February 19 and 20, 1920, in the Southern Hotel, Columbus, Ohio. The chief purpose of the two day gathering is to strengthen the spirit of fellowship which is so essential to the development of industry in the matter of distribution as well as of production. Therefore, the conference is to be divided into business talks on subjects of common interest and into informal sessions consisting of complimentary luncheons. In addition, there will be a theater party and a grand ball. Prominent among those who are working hard to make the conference a social as well as a business success is the W. E. Lamneck Company, of Columbus, Ohio, manufacturers and distributors of warm air heater fittings and sheet metal supplies.

PURCHASES A ROOFING BUSINESS.

In line with the natural development of its services, the Whitaker-Glessner Company, Wheeling, West Virginia, has completed negotiations for the purchase of the Wheeling Ceiling and Roofing Company. The motive of the transaction is not merely a first consideration of profit. It takes its inspiration from the policy of the Whitaker-Glessner Company to give the utmost accommodation to its customers in filling their orders with promptness and dispatch. The observation is not out of place here that by reversing the usual order of motives, business thrives and friendly relations are fostered. That is to say, by sincerely holding in mind the satisfaction of the customer as the foremost motive all the facilities of an organization are keyed to the highest pitch of efficiency. The result is more production, better quality, improvement of standards of service and uniform increase of the volume of business. Logically profits follow—but the thought of them does not precede the actual work of building up the morale of such an establishment.

NOTES AND QUERIES.

Address of J. Wiss and Sons Company.

From Cicero-Chicago Corrugating Company, 1542 South 51st Court, Cicero, Illinois.

Can you give me the address of J. Wiss and Sons Company?

Ans.—J. Wiss and Sons Company, 35 Littleton Avenue, Newark, New Jersey.

Core Making Machine.

From J. E. White, care of Keller Brothers Auto Sheet Metal Works, 336 Madison Avenue, Memphis, Tennessee.

Please advise where I can procure machinery for making cores for automobile radiators.

Ans.—International Molding Machine Company, 2614 West 16th Street, Chicago, Illinois, and Wadsworth Core Machine and Equipment Company, Akron, Ohio.

Aluminum Solder.

From Hospital Specialty Company, Bankers' Life Building, Lincoln, Nebraska.

Kindly let us know who makes solder for aluminum.

Ans.—L. B. Allen and Company, Incorporated, 4519 North Lincoln Street, and Transom Manufacturing Company, 186 North La Salle Street, both of Chicago, Illinois.

Aluminum Rivets.

From Fred L. Michaels, Arcadia, Indiana.

Where can I secure aluminum rivets for repairing aluminum cooking utensils?

Ans.—F. L. Grammes and Sons, Allentown, Pennsylvania, and Blake and Johnson Company, 1500 Thomaston Avenue, Waterbury, Connecticut, make aluminum rivets.

Glass Jars.

From W. F. Kasbohm, 125 North Washington Street, Van Wert, Ohio.

Can you tell me who manufactures glass jars such as are used on household coffee mills?

Ans.—Arcade Manufacturing Company, Freeport, Illinois; Steinfeld Brothers, 116 West 32nd Street, New York City, and the Imperial Glass Company, Bellaire, Ohio.

Asbestos Paper.

From Spokane Sheet Metal Supply Company, 806 Madelia Street, Spokane, Washington.

Will you please give us the names of firms that manufacture asbestos paper?

Ans.—Dominion Asbestos and Rubber Corporation, 154 Nassau Street, New York City; A. W. Jack Corporation, Lockport, New York; Keasbey and Mattison, Ambler, Pennsylvania; Albion Manufacturing Company, Seattle, Washington; and General Asbestos Rubber Company, Charleston, South Carolina.

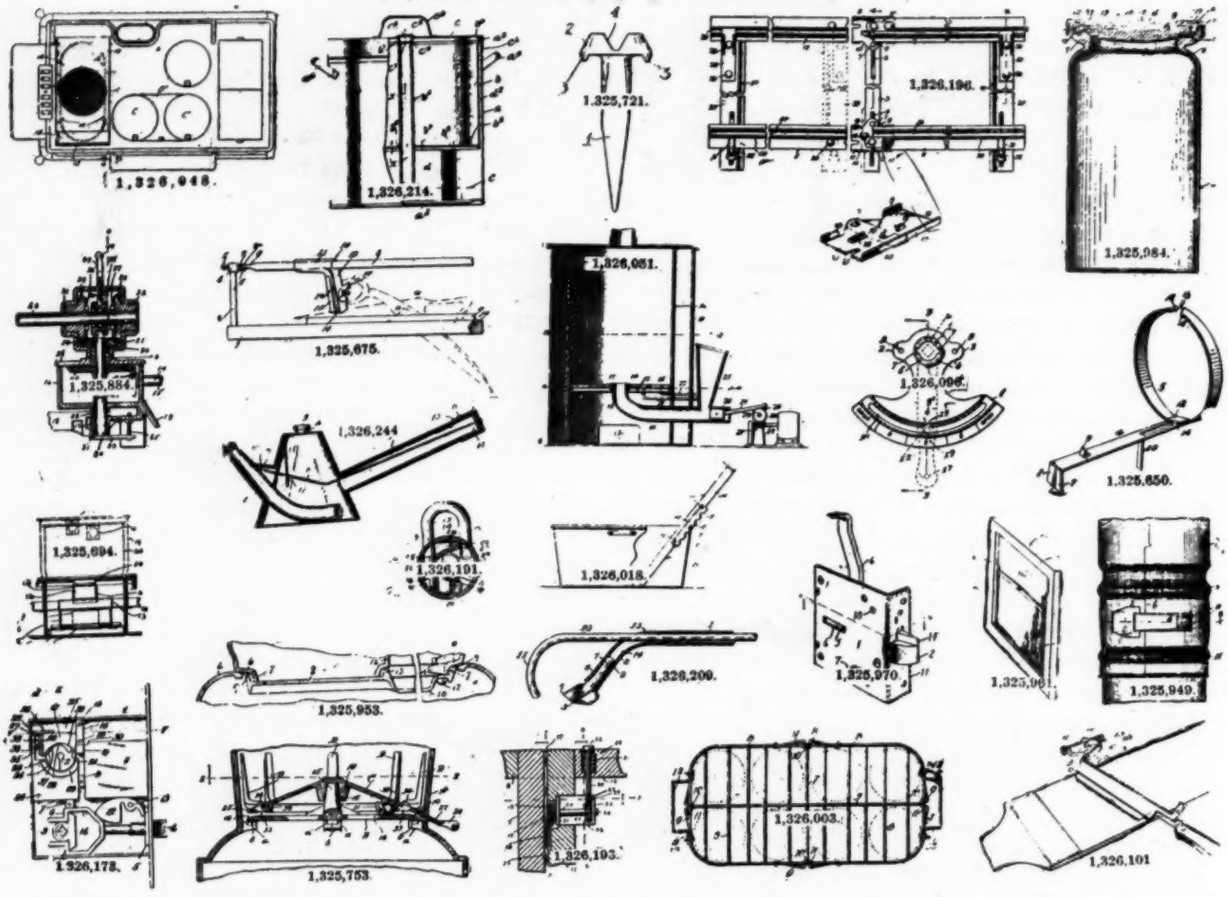
Sheet Metal Screws.

From Churchill Hardware Company, 246-248 East Main Street, Galesburg, Illinois.

Can you furnish us with the name of makers of sheet metal screws?

Ans.—Parker Supply Company, 785 East 135th Street, New York City; Friedley-Voshardt Company, 733 South Halsted Street, Chicago, Illinois, and Pace Manufacturing Company, Incorporated, 123 Liberty Street, New York City.

NEW PATENTS.



1,325,650. Stovepipe Holder. Asbery T. Mills, Richland, Iowa. Filed March 4, 1919.

1,325,675. Scissors Sharpener. Napoleon Letendre, Manchester, New Hampshire. Filed March 12, 1917.

1,325,694. Portable Stove. Sylena A. Duncan, Neshanic Station, New Jersey. Filed November 20, 1918.

1,325,721. Tack or Nail. Charles K. Hill, Cleveland, Ohio, assignor to The H. C. Tack Company, Cleveland, Ohio, a Corporation of Ohio. Filed January 6, 1919.

1,325,753. Grate for Stoves and Furnaces Joseph Reif, Hebron, Indiana. Filed December 16, 1916.

1,325,884. Wringer Driving Mechanism. Herman H. Toll, Clarinda, Iowa, assignor to Clarinda Lawn Mower Company, Clarinda, Iowa, a Corporation of Iowa. Filed November 26, 1917.

1,325,949. Stovepipe Joint. Walter Levin. Superior, Wisconsin. Filed May 28, 1917.

1,325,953. Stove. William L. Mersfelder, Detroit, Michigan. Filed May 9, 1919.

1,325,961. Window or Door Screen. William J. Smith, Roswell, New Mexico. Filed October 15, 1919.

1,325,970. Antirattling Door Latch. Alois Zwierzina, Detroit, Michigan, assignor to Joseph N. Smith & Co., Detroit, Michigan, a Corporation of Michigan. Filed June 27, 1918.

1,325,984. Preserve Jar. Edson L. Ford, Dorchester, Massachusetts. Filed March 11, 1919.

1,326,003. Collapsible Rack for Bottles and Jars. Frank S. Spohr, La Fayette, Ind., assignor to Barbee Wire & Iron Works, La Fayette, Ind., a Corporation of Indiana. Filed July 11, 1919.

1,326,018. Washboard Holder. Peter H. Brown, Butte, Montana. Filed May 16, 1919.

1,326,048. Auxiliary Stove Lid. Ella Stout Green, Trenton, New Jersey. Filed October 24, 1918.

1,326,051. Stove. John Grobling, Detroit, Michigan. Filed March 31, 1919.

1,326,096. Damper Apparatus. Heyman Rosenberg, New York, New York. Filed May 19, 1919.

1,326,101. Razor Stropping Device. Henry J. Schmidt and Elden R. Schmidt, Winesburg, Ohio. Filed February 5, 1917.

1,326,173. Springless Door Lock and Latch. Louis F. Bonaly, Leavenworth, Kansas. Filed April 17, 1919.

1,326,191. Combination Lock. Emil Gornicec, Youngstown, Ohio. Filed May 23, 1918.

1,326,193. Latching Device for Doors. Charles H. Harden, Camden, New York. Filed April 23, 1917.

1,326,196. Curtain Stretcher. Peter O. Holmquist, Chicago, Illinois. Filed March 11, 1918.

1,326,209. Clinker Removing Device. David F. Merriman, Waterloo, Iowa. Filed February 17, 1919.

1,326,214. Cooking utensil. Henry Schlesinger, New York, N. Y., assignor of three-fourths to William J. Jaeger, New York, N. Y. Filed July 9, 1919.

1,326,244. Wick-Raising Device for Torches. Richard Wilson, Ecorse, Mich. Filed May 19, 1919.

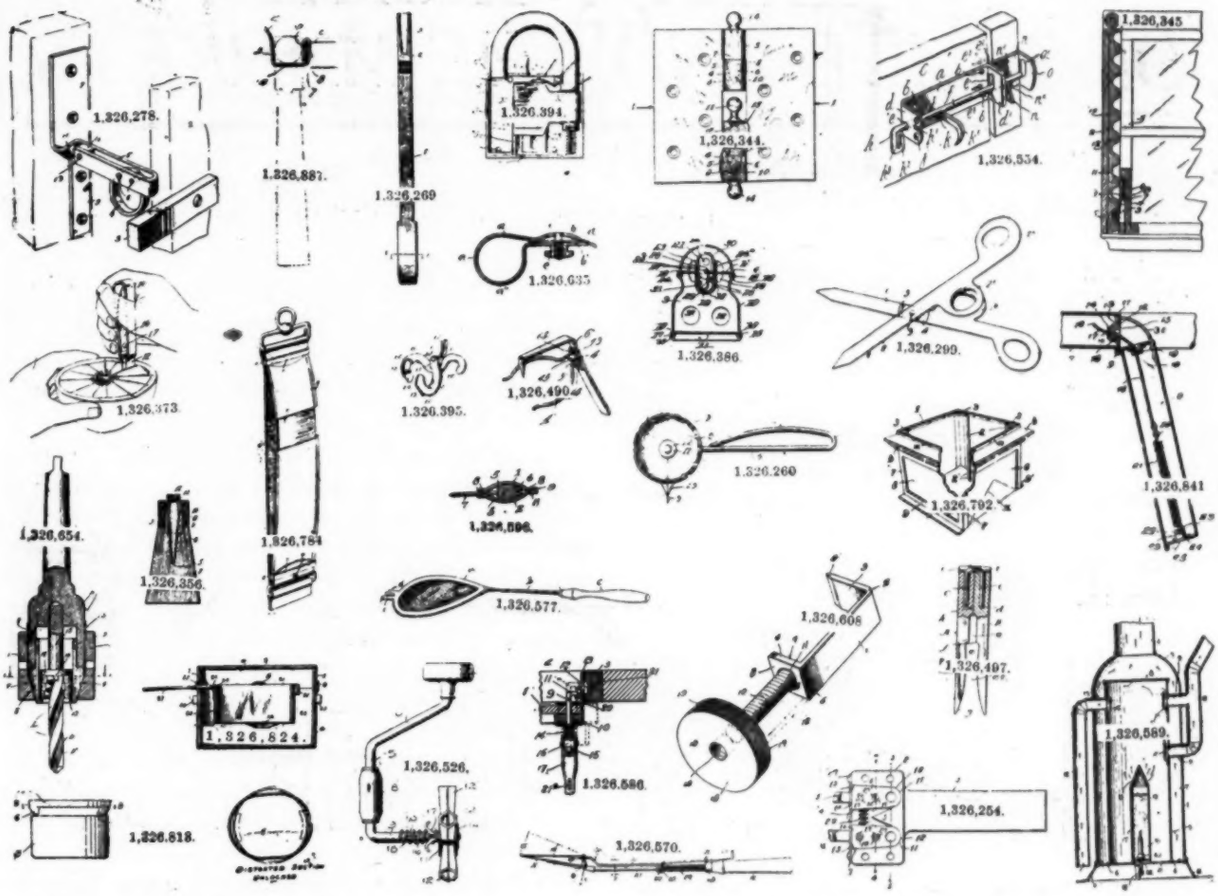
RELIABLE MAN WORKS WITH A WILL.

The reliable person accepts the work entrusted to him with good grace, tackles each task with a light heart, fulfills every obligation in a painstaking manner and follows each detail through to a clear finish.

The reliable person not only guards against mistakes himself but is all the while trying to mend the ragged edges that are caused by those who are careless.

He is always ready when called upon, never frets nor falters in his duty, seldom has to do his work over again and soon gains the trust and love of his associates.

NEW PATENTS.



1,326,254. Tool Molder. Jean B. E. H. Cote, Weymouth, Mass. Filed February 1, 1918.

1,326,260. Pie Trimmer. Leo C. Hardebeck, Butte, Montana. Filed April 22, 1919.

1,326,269. File Holder William D. Ivy, Memphis Tennessee. Filed June 23, 1919.

1,326,278. Gate Latch. Sam Bell McKnight, Milano, Texas. Filed May 21, 1919.

1,326,299. Scissors. Harry Smit, New York, New York. Filed September 12, 1918.

1,326,344. Pinless Hinge. Edwin B. Holden and George L. Clark, Syracuse, New York, assignors to Adelaide W. White, Syracuse, New York. Filed June 8, 1917.

1,326,345. Sash Holder. Howard L. Horton, Pompton Lakes, New Jersey. Filed June 27, 1917.

1,326,356. Shaving Brush. Dalmacio Perez Lopez, San Nicolas, Cuba. Filed May 26, 1919.

1,326,373. Fruit Knife. David B. Rice, Worcester, Massachusetts. Filed March 28, 1919.

1,326,386. Oven Thermometer. Martha M. Benziger, Brooklyn, New York. Filed July 2, 1918.

1,326,394. Padlock. Arthur W. Dowe, San Francisco, Calif. Filed January 27, 1919.

1,326,395. Automobile Tire Chain Repair Device. Leroy A. Duryea, East Hampton, Connecticut. Filed August 10, 1918.

1,326,490. Bottle Cap Remover. Benjamin F. Fowler, Minneapolis, Minnesota, assignor to The Wonder Specialty Manufacturing Company, Incorporated, St. Paul, Minnesota, a Corporation. Filed February 1, 1916, Serial No. 75,540. Renewed March 19, 1919.

1,326,497. Clothespin. William Hagelstein, New York, New York. Filed April 4, 1918.

1,326,526. Wrench. Rupert N. Oysler, Davenport, Iowa. Filed September 6, 1919.

1,326,554. Combination Latch Lock and Bolt. John Cail Watson, Clifton Hill, Victoria, Australia. Filed November 29, 1918.

1,326,570. Culinary Device. Ernest H. Burmeister, Evanston, Illinois. Filed April 11, 1918.

1,326,577. Fly-Swatter. Ernest E. Cullen, Anchorville, Michigan, assignor of one-half to George E. Vernier, Fair Haven, Michigan. Filed February 28, 1919.

1,326,586. Door Fastening Means. Erick O. Fellroth, Westby, Montana. Filed February 21, 1919.

1,326,589. Heater. Charles W. Hall, Youngstown, Ohio. Filed December 14, 1918.

1,326,596. Razor Blade Honing Handle. Frank Hyde, Sioux Falls, South Dakota. Filed January 27, 1919.

1,326,608. Screen or Storm Window Fastener. John W. Nippert, Worden, Montana. Filed May 29, 1919.

1,326,635. Razor. Heinrich Besancon, Bienne, Switzerland. Filed January 30, 1919.

1,326,654. Drill Chuck. Edward Flicek, Hartford, Wisconsin. Filed March 10, 1919.

1,326,784. Auxiliary Attachment for Razor Strops. Charles H. Richardson, Dover, New Hampshire. Filed March 30, 1916.

1,326,792. Cupola. Gustave F. Sexauer, La Crosse, Wisconsin, assignor to Badger Corrugating Company, a Corporation of Wisconsin. Filed July 8, 1919.

1,326,813. Closure Cap for Bottles and Jars. Nathaniel B. Wales, New York, N. Y., assignor to Richard D. Ward, New York, N. Y. Filed July 7, 1919.

1,326,824. Ash Sifter. William C. Anderson, Brunswick, Georgia. Filed April 23, 1918.

1,326,841. Door Closer. Joseph M. Bousquet, Middlesex, Vermont. Filed November 13, 1917.

1,326,887. Tool Carrier. William A. Wood, Nashville, Tennessee. Filed October 21, 1918.

WEEKLY REPORT OF TRADE AND THE MARKETS

PROSPECTS FOR STEEL PRODUCTION ARE MUCH BRIGHTER.

In the Pittsburgh district, steel mills are now producing at about 80 per cent of capacity. It is not unlikely that operations will reach 90 per cent of capacity in February or March. The present rate of production is maintained in the face of serious handicaps. In the first place there is a shortage of coke, both beehive and by-product, due to insufficient car supply respectively at beehive ovens and at coal mines supplying coal to by-product ovens. The car shortage is assumed to be temporary as it is due partly to bad weather and partly to all cars not having gotten back to the regular routes after long journeys they made with coal at the time of the coal crisis. Then there is a shortage of labor, which has been decreasing rapidly in the past fortnight, promising improved operations even next week. There has also been the difficulty that many men in employment are not trained to their work, being either new men or men who shifted employment during the iron and steel strike.

These being the handicaps, the prospect is for steady improvement in operation of steel mills week by week. It is still winter, however, and a spell of bad weather may affect mill operations both directly and through the medium of reduced transportation for fuel coal, coking coal, beehive coke and pig iron. It is unlikely that there will be any serious curtailment in production through inability to move finished product, as there was three years ago, since railroad operations are now well coordinated through the unified system of control. Three years ago there was such congestion that in many cases cars could not be gotten into mill yards at all, while many cars were blocked in the East and simply made idle. At the present time the chief menace is that the railroads are short of motive power and cars whereby they can operate pretty well in fair weather but have little reserve force or capacity for bad weather.

Steel mill operations are proving heavier in the fore part of January than was being predicted in December. In fact, the steel industry has been disposed for some time past to take a much less sanguine view of its prospects than has hitherto been the case, and some allowance must therefore be made for this new personal equation on the part of steel producers, and particularly of sales managers. So far as mill managements are concerned, they are of course pushing as usual for maximum production. For many months there was lack of orders to hold down steel mill operations and then there was the strike, so that naturally with those difficulties out of the way mill managers are very keen to show what they can do.

STEEL.

The problem of maintaining steel prices on the basis of the schedule of March 21st, 1919, is pressing more and more on the steel industry, and it is rapidly becoming evident that, despite the efforts of the leading interest to maintain this old price level, the demand is so strong that smaller producers are getting much higher prices and the corporation is unable to control prices as formerly.

This is due mainly to the fact that all of the companies are booked as far ahead as they care to accept business and as the demand has outstripped production, consumers who have been unable to place their business in one place must do it in another, and if this entails paying a premium, well it is passed along to the ultimate consumer in the cost of the manufactured product. It is this feature that the leading interest is trying to combat, as every advance is but one more notch in the high cost of living and of doing business.

The unfilled tonnage statement of the leading interest shows that the corporation is not only holding its prices down but is selling at those prices, to the extent of a couple million tons or more in December. The unfilled obligations December 31st were 8,265,366 tons, indicating an increase during December of 1,137,036 tons, which is 87 per cent of capacity, estimated on a conservative basis. December shipments we estimate at an average of 73 per cent of capacity, against 62 per cent in November. The percentages added made 159 per cent, which represents the bookings in the month, this comparing with 114 per cent in November. In September and October, when prices were not particularly strong, and when the extent and duration of the steel strike could not be gauged well, the bookings were light.

COPPER.

The monthly report of the United States Bureau of Mines states that the reasons for decreased production of copper are clear to anyone who has followed the situation in the industry and the trend of events during the past year. Immediately after the armistice there was an evident anticipation of a sustained and pronounced demand for copper to meet the great need of that metal for reconstructive purposes. When it became apparent that this demand would not materialize, due to political, financial, and labor troubles, the industry was faced with the problem of disposing of an enormous copper surplus which at the beginning of 1919 was estimated at 1,500,000,000 pounds. Today while there is still a large surplus of copper in the United States awaiting market, foreign orders are in sight which make the situation appear more optimistic. In some quarters it is estimated that manufacturers are consuming about 75 per cent of normal refinery production. In former years the domestic demand

consumed about one-half the production. The curtailed output of the copper mines will insure keeping the surplus reasonably low.

Prices for copper sheet in the Chicago market are quoted at 29½ cents per pound.

TIN.

The fluctuations of the tin market have shown great sensitiveness to the London reactions, but consumers seem to hold the opinion that while we are in for a year of high prices on the metal, the recent pace has been too rapid to make it look altogether sound. The prospects are for a large consumption of tin in the United States this year, and consumers will probably take advantage of sharp reactions if they come to increase their supplies.

LEAD.

The St. Louis lead market continues to be very firm, but on account of the acute scarcity of offerings, there are few sales, and these are at steadily advancing prices. The weather has had the effect of further restricting the output, and supplies are very low. The large producers are taking care of the pressing needs of their old customers, and are making no effort to sell to others. The lead ore market is fully as strong as the lead market, and although there is considerable speculation, the consumption of lead is increasing rapidly, and the market is in a strong position.

SOLDER.

The quotations ruling the Chicago market for solder are as follows: Warranted, 50-50, per pound, 39.50 cents; Commercial, 45-55, per pound, 37.10 cents; Plumbers' per pound, 34.75 cents.

ZINC.

Much strength is manifested by the St. Louis zinc market, as offerings are scarce and a demand exists for export. The domestic demand is slightly improving. The calling off of the steel strike has had no noticeable effect upon the market, but an increased consumption is expected.

The galvanizers are still following a hand-to-mouth policy. The occasional inquiries from them are for moderate amounts and for near deliveries.

Producers in the far West report great difficulty in obtaining shipments of ore on account of the car shortage, a condition which, in the face of the active business that seems likely for the coming year, is a serious and increasing menace, and which of itself should make it advisable for buyers to arrange more in advance for their needs than usual.

Most of the producers apparently expect a recovery of the market to its former level of about 9.50 cents, and having tolerably good bookings are not free sellers on today's market.

The advance in ore prices is a reason for producers going slowly in the sale of slab zinc, for with ore now up to $60 in Joplin, the smelters have not got such a good margin as they had a week ago.

TIN PLATE.

The tin mills are operating as fully as physical conditions permit, there being an ample demand for the product. In past years mills used to accumulate stocks late in the year and even in the early months of the new year, but demand is now spread more uniformly over the year. There are heavy shipments now in connection with the Pacific Coast salmon trade, and the last of the tin plate must leave by the middle of February to be in time for the salmon run.

About 90 per cent of the tin mills are operating, the chief limiting factor being the sheet bar supply, which is somewhat scant. Production is hardly equal to requirements and there have been great delays in transit.

SHEETS.

Indications are that a shortage of sheet bars now is the restrictive factor in the production of sheets and no progress worthy of note is being made in cutting down the live orders, which accumulated over the last quarter of last year as a result of the steel and coal strikes. The supply situation consequently remains extremely taut and little early tonnage can be obtained even at liberal premiums over the regular base prices. Small tonnage of galvanized sheets recently have been booked by independent makers above 7.00 cents base, while bookings of black at 5.75 cents base, and of blue annealed as high as 4.25 cents, base also have been made by some independent companies. These prices, in all instances have been made by the buyers rather than the sellers and illustrate how urgent are the requirements of some consumers.

OLD METALS.

Wholesale quotations in the Chicago district which may be considered nominal are as follows: Old steel axles, $33.00 to $35.00; old iron axles, $35.00 to $36.00; steel springs, $25.00 to $26.00; No. 1 wrought iron, $26.00 to $27.00; No. 1 cast, $36.00 to $37.00, all net tons. Prices for non-ferrous metals are as follows, per pound: Light copper, 14½ cents; light brass, 9½ cents; lead, 5½ cents; zinc, 5½ cents; zinc, 5½ cents; cast aluminum, 24½ cents.

PIG IRON.

While less activity is noted in some pig iron districts, caused by the sold out condition of furnaces in some districts, notably Pittsburgh and Philadelphia, buyers still persist in trying to place tonnages ranging from 15,000 tons of foundry and malleable iron to 30,000 tons of basic iron, all of which is wanted for delivery in the first half of the year. Furnaces are finding the distribution of coke still unsatisfactory and proving a hindrance to a heavier iron production. While thousands of cars are loaded with coke on track between the ovens and blast furnaces, the coke is not moving promptly.

The market report of Rogers Brown and Company, Cincinnati, Ohio, states that the buyers, apparently, attempted to protect themselves for the tonnages they will require for this year without adding impetus to the advancing price wave by sending inquiries broadcast. As the week has progressed, however, and more business came to light, extremely heavy open buying has developed.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS.

PIG IRON.

Basic	$40 00
Northern Pdy., No. 2	40 50
Southern Pdy., No. 2	43 25
Lake Sup. Charcoal	42 50
Malleable	41 00

FIRST QUALITY BRIGHT TIN PLATES.

			Per box
IC	14x20	112 sheets	$13 50
IX	14x20		15 50
IXX	14x20		17 00
IXXX	14x20		18 40
IXXXX	14x20		19 60
IC	20x28		27 00
IX	20x28		31 00
IXX	20x28		34 00
IXXX	20x28		36 80
IXXXX	20x28		39 20

COKE PLATES.

Cokes, 180 lbs	20x28	$16 80
Cokes, 200 lbs	20x28	17 00
Cokes, 214 lbs. IC	20x28	17 40
Cokes, 270 lbs. IX	20x28	19 30

BLUE ANNEALED SHEETS.

No. 10 per 100 lbs.	$5 27
No. 12 per 100 lbs.	5 32
No. 14 per 100 lbs.	5 37
No. 16 per 100 lbs.	5 45

ONE PASS COLD ROLLED BLACK.

No. 18-20 per 100 lbs.	$5 80
No. 22-24 per 100 lbs.	5 85
No. 26 per 100 lbs.	5 90
No. 27 per 100 lbs.	5 95
No. 28 per 100 lbs.	6 00
No. 29 per 100 lbs.	6 10

GALVANIZED.

No. 16 per 100 lbs.	$6 75
No. 18-20 per 100 lbs.	6 90
No. 22-24 per 100 lbs.	7 0[illegible]
No. 26 per 100 lbs.	7 2[illegible]
No. 27 per 100 lbs.	7 3[illegible]
No. 28 per 100 lbs.	7 5[illegible]
No. 30 per 100 lbs.	8 0[illegible]

WELLSVILLE POLISHED STEEL

No. 18-20 per 100 lbs.	$7 1[illegible]
No. 22-24 per 100 lbs.	7 2[illegible]
No. 26 per 100 lbs.	7 3[illegible]
No. 27 per 100 lbs.	7 4[illegible]
No. 28 per 100 lbs.	7 5[illegible]

KEYSTONE HAMMERED POLISHED STEEL.

28-26 per 100 lbs.	$9 85
25-22 per 100 lbs.	9 35

BAR SOLDER.

Warranted, 50-50 per 100 lb.	39 50
Commercial, 45-55 "	37 10
Plumbers' "	34 75

ZINC.

In slabs 10½

SHEET ZINC.

Cask lots	13 c
Less than cask lots	13½-13¾c

COPPER.

Copper Sheet, base 29½c

LEAD.

American Pig	$9 35
Bar	9 60

Sheet.

Full coils per 100 lbs.	$11 00
Cut coils per 100 lbs.	11 25

TIN.

Pig tin	71c
Bar tin	72c

HARDWARE.

ADZES.

Carpenters'.
Plumbs ..... Net

Coopers'.
Barton's ..... Net
White's ..... Net

Railroad.
Plumbs ..... Net

AMMUNITION.

Peters Cartridges.
Semi-Smokeless ..... Less 18%
Smokeless ..... Less 18%

Shells, Loaded, Peters.
Loaded with Black Powder. Less 15%
Loaded with Smokeless Powder, medium grades ..... Less 15%
Loaded with Smokeless Powder, high grade ..... Less 15%

Winchester.
Smokeless Repeater Grade. Less 15%
Smokeless Leader Grade ... Less 15%
Black Powder ..... Less 15%

U. M. C.
Nitro Club ..... 10&5%
Arrow ..... 10&5%
New Club ..... 10&5%

Gun Wads—per 1000.

Winchester 7-8 gauge	10&7½%
" 9-10 gauge	10&7½%
" 11-28 gauge	10&7½%

Powder.	Each
DuPont's Sporting, kegs	$11 25
" " ½ kegs	3 10
DuPont's Canisters, 1-lb.	56
" Smokeless, drums	43 50
" " kegs	22 00
" " ½-kegs	5 75
" " canisters	1 00
L. & R. Orange, Extra Sporting kegs	11 25
L. & R. Orange, Extra Sporting ½-kegs	5 90
L. & R. Orange, Extra Sporting ¼-kegs	3 10
L. & R. Orange, Extra Sporting 1 lb. canisters	56
L. & R. Orange, Extra Sporting ½ lb. canisters	32
L. & R. Orange, Extra Sporting ¼-lb. canisters	22
Hercules "E.C." and "Infallible" 50 can drums	43 50
Hercules "E. C." kegs	22 50
Hercules "E. C." ½-kegs	11 25
Hercules "Infallible," 25 can drums	22 00
Hercules "Infallible," 10 can drums	9 00
Hercules "E. C." ¼-kegs	5 75
Hercules "E.C." and "Infallible" canisters	1 00
Hercules W. A. .30 Cal. Rifle, canisters	1 25
Hercules Lightning Rifle, canisters	1 25
Hercules Sharpshooter Rifle, canisters	1 25
Hercules Unique Rifle, canisters	1 50
Hercules Bullseye Revolver, canisters	1 00

ANVILS.

Solid Wrought ..... 23 & 23½ per lb.

ASBESTOS.

Board and Paper, up to 1/16" 17c per lb.
Thicker ..... 18c per lb.

Broad.

Plumbs, West, Pat.	List
" Can. Pat.	$69 00
Firemen's (handled), per doz.	21 00

Single Bitted (without handles).

	Prices
Warren Silver Steel	on application
Warren Blue Finished	"
Matchless Red Pole	$11 50

Double Bitted (without handles).
Warren's Natl. Blue, 3½ to 4½ lb. ..... Prices on application
The above prices on axes of 3 to 4 lbs. are the base prices.

BAGS, PAPER NAIL.

Pounds	10	16	20	25
Per 1,000	$5 00	6 50	7 50	9 00

BALANCES, SPRING.

Pelouze 20%

BARS, CROW.

Pinch or Wedge Point, per cwt. ... $8 50

BASKETS.

Clothes.

Small Willow per doz.	15 00
Medium Willow "	17 00
Large Willow "	20 00

Galvanized Steel.

	½ bu.	1 bu.	1½ bu.
Per doz.	$11 50	$17 00	$22 00

AUGERS

Boring Machine 60%
Irwin's 25%
Carpenter's Nut 50%

Hollow.
Bonney's ..... per doz. 30 00

Post Hole.
Iwan's Post Hole and Well 30%
Vaughan's, 4 to 9-in. ..per doz. $14 00

Ship.
Ford's, with or without screw, Net list

AWLS.

Brad.

No. 3 Handled per doz.	$0 65
No. 1050 Handled "	1 40
Shouldered, assorted 1 to 4, per gro.	4 00
Patent asst'd, 1 to 4 "	85

Harness.

Common "	1 05
Patent "	1 00

Peg.

Shouldered "	1 60
Patented "	75

Scratch.

No. IS, socket hand'ld. per doz.	2 50
No. 344 Goodell-Pratt, List, less	35-40%
No. 7 Stanley "	2 25

AXES.

First Quality, Single Bitted, 3 to 4 lb. ..... per doz. 15 50
First Quality, Double Bitted, ... per doz. 20 50

BEATERS.

Carpet. Per doz.

No. 7 Tinned Spring Wire	$1 10
No. 8 Spring Wire coppered	1 50
No. 9 Preston	1 75

Egg. Per doz.

No. 50 Imp. Dover	$1 10
No. 102 " " tinned	1 35
No. 150 " " hotel	2 10
No. 10 Heavy hotel tinned	2 10
No. 13 " " "	3 30
No. 15 " " "	3 60
No. 18 " " "	4 50

Hand.

	8	9	10	12
Per doz.	$11 50	13 00	14 75	18 00

Moulders'.
12-inch ..... Per doz. 20 00

BELLS.

Call.
3-inch Nickeled Rotary Bell, Bronzed base ..... per doz. $5 50

Cow.
Kentucky 30%

Door. Per doz.
New Departure Automatic ... $7 50
Rotary.

3 -in. Old Copper Bell	6 00
3 -in. Old Copper Bell, fancy.	8 00
3 -in. Nickeled Steel Bell	6 00
3½-in. Nickeled Steel Bell	6 50

Hand.

Hand Bell polished	List plus 5%
White Metal "	5%
Nickel Plated "	5%
Swiss "	10%

Miscellaneous.

Church and School, steel alloys				30%
Farm, lbs	40	50	75	100
Each	$3 00	3 75	5 50	7 25

BEVELS, TEE

Stanley's rosewood handle, new list ..... Nets
Stanley's iron handle ..... Nets

BINDING CLOTH.

Zinced 55%
Brass 40%
Brass, plated 60%

BITS.

Auger.
Jennings Pattern 25%
Ford Car ..... List plus 5%
Ford's Ship ..... " " "
Irwin 35%
Russell Jennings 20%
Clark's Expansive 33⅓%
Steer's " Small list, $22 00 ..... 5%
" " Large " $26 00 ..... 5%
Irwin Car 35%
Ford's Ship Auger pattern Car ..... List plus 5%

Center 10%

Countersink.

No. 18 Wheeler's	per doz.	$2 25
No. 20 "	"	3 00
American Snailhead	"	1 75
" Rose "	"	2 00
" Flat	"	1 40
Mahew's Flat	"	1 60
" Snail	"	1 90

Dowel.
Russell Jennings 20%

Gimlet.
Standard Double Cut. Doz. $1 10—$1 60
Countersink ..... Doz. 1 80

Reamer.

Standard Square	Doz.	2 50
American Octagon	"	2 50

Screw Driver.

No. 1 Common	40
No. 26 Stanley	75

BLACKING, STOVE. (See Polish)

BLADES, SAW.

Butchers'.
Standard, ¾ & 1¼-in.....Net
Clock Spring..... "
Star..... "

Hack.
Atkins.....5%
Star.....Nets

Wood.
Disston

Nos.	6	66	26
	$8 00	$8 50	$8 00

Atkins

Nos.	2	14	18
	$3 85	$6 50	$4 75

BLOCKS.

Snatch.
Wooden.....Plus 10%

Tackle.
Iron Strapped.....Plus 10%

BOARDS.

Stove.
Wabash Crystal.....Net Prices
Wabash Oriental..... "
Wabash Mosaic..... "
Wabash Delft Enameled.. "
Wabash Art Inlay..... "

Wash.
No. 760, Banner Globe, single) .....per doz. $5 25
No. 652, Banner Globe, (single) .....per doz. 6 75
No. 801, Brass King.. " 8 25
No. 860, Single—Plain Pump 6 25

BOLTS.

Carriage, Machine, etc.
Carriage, ¾x6 and sizes smaller, and shorter..... 30%
Carriage, sizes larger and longer than ¾x6..... 20%
Machine, ¾x4 and sizes smaller and shorter..... 35-5%
Machine, sizes larger and longer than ¾x4.....25-5%
Stove.....70%
Tire.....60%

Mortise, Door.
Gem, iron..... 5%
Gem, bronze plated..... 5%

Barrel.
Cast.....Nets
Wrought..... "
Wrought, bronzed..... "

Flush.
Wrought..... "

Spring.
Wrought..... "
Wrought, heavy..... "

Square.
Wrought..... "

BORERS.

Angular.
Miller's Falls.....per dos. $23 00
Sill borers, No. 51... " 34 00
" " 52... " 39 50

Bung. Doz.
Enterprise Mfg. Co.'s No. 1....10%
" " " No. 2....10%

BOXES.

Mail, No..... 2 4 10
Per doz.....$18 00 23 00 29 00

Miter.
Stanley's.....Net Prices
Stearns, No. 2.....per doz. $30 00

BRACES.

Fray's Genuine Spofford's..20&10%
" No. 08.....$7 50
" No. 010..... 8 00

BRACKETS.

Hay Rack.
Wenselmann's No. 1, per doz. sets.....$18 00
Wenselmann's No. 2, per doz. sets..... 19 20

Shelf.
Wrought Steel.....40%

Well.
Oak, Wrought Iron Riveted Top Ears.....per doz. $8 00

BURRS, RIVETING.

Copper Burrs only.....25% above list
Tinners' Iron Burrs only.....30%

BUTTS.

Cast Iron.....7½%
Wrought Brass (New List).....Plus 5%
Wrought Steel, Bright.....40%
Wrought Steel, Japanned....Net prices

CALIPERS.

Double.....Nets
Inside and Outside..... "
Wing..... "

CALKS.

Logger's Boot.
(Lufkin R. Co.'s), per M.....$7 00

Toe.
Blunt and medium, 1 prong, per 100 lbs.....$6 20
Sharp, 1 prong, per 100 lbs.... 6 70

CANS.

Milk.
Elgin.

Gals.	5	8	10
Each	$4 00	$5 15	$5 15

Iowa Pattern.

Gals.	5	8	10
Each	$4 00	$5 15	$5 15

CAN OPENERS.

See Openers.

CAPS, GUN.

See Ammunition.

CARPET STRETCHERS.

See Stretchers.

CARRIERS.

Hay.
Diamond, Regular....each, Nets
Diamond, Sling..... " "

CARTRIDGES.

See Ammunition.

CASTERS.

Standard—Ball Bearing.....50&10%
Bed.....40%
Common Plate.
Brass Wheel.....15%
Iron and porcelain wheels, new list.....50%
Philadelphia Plate, new list....50%
Martin's.....40%

CATCHERS, GRASS.

No. 160S, per doz.....$12 25
No. 165S, " 14 01

CEMENT, FURNACE.

American Seal, 5 lb. cans, net $0 45
" " 10 lb. cans, " 90
" " 25 lb. cans, " 1 87
Pecora, 5 lb. cans..... " 45
" 10 lb. cans ..... " 90
" 25 lb. cans..... " 1 87

CHAIN AND CHAINS.

Breast Chains.

Doubleslack.....doz. pairs,		$8 50
With Covert Snaps	"	5 80
With Slide.....	"	5 00
Without Slide....	"	4 60

Picture Chains.
Light Brass, 3 ft.....per doz. $1 2
Heavy Brass, 3 ft.... " 1 7

Sash Chain. (*Morton's*)
Steel, per 100 ft.
0..... $2 5
2..... 3 1
1..... 3 60

Champion Metal.
0R..... 5 40
2R..... 5 60
1R..... 7 75

Champion Metal.–Extra Heavy.
1H..... 9 5

Cable Sash Chains.
Steel.....List Net Plus 15%

CHALK, CARPENTERS'

Blue.....per gro., $1 4
Red..... " 1 4
White..... " 1 2
Common White School Crayon..... " 25

CHARCOAL.

In bags.....per bag $1.7

CHECKS, DOOR.

Blount.....Net lis
Corbin..... "

CHIMNEY TOPS.

Iwan's Volcano.....35%

CHISELS.

Box.

Inches	12	14
Round, per doz.	$5 25	5 75
Flat, per doz.	7 25	8 25

Cold.
Good quality, ¾ in. and larger.....Nets
Smaller size, per doz.....Nets
Socket, Firmer.
Ohio.....Price on Application
Socket, Framing.
Ohio..... Price on Application
Tanged, Firmer.—Barton's.
With handles.....Net list
Choppers, See *Cutters, Meat.*

CHUCKS, DRILL.

Goodell's, for Goodell's Screw Drivers..... List less 35-40%
Yankee, for Yankee Screw Drivers..... 6 00

CHURNS.

Anti-Bent Wood,

Gal.	5	7	10
Each	$3 90	4 60	4 85

Belle, Barrel.....65&7½%
Common Dash,

Gal.	5	7
Per doz.	17 00	19 00

CLAMPS.

Adjustable.
Martin's.....30%
No. 63, Screw.....20%
Cabinet.
Screw.....20%
Carpenters'.
Steel Bar.....List price plus 25%
Carriage Makers'.
2½".....per doz. $7 00
5" ..... " 14 00
8" ..... " 28 00
12" ..... " 46 00
Quilt Frame.
No. 30 Ball and Socket, 2½" head.....per gross $11 25
No. 50, Ball and Socket, 3½" head..... per gross 12 25
Hose.
Sherman's, brass, ½-in., per doz. .48c
Double, brass, ½-in., " 1 20

Saw Filers.
Wentworth's, No. 1, $12.50; No. 2, $18.25. No. 3, $16.25.

CLAWS, TACK.

Wood hdl. No. 10.....per doz. $0 95
Forged steel, wood hdle. " $1 75
Solid steel..... " 2 40
Giant..... " 50

CLEANERS.

Drain.
Iwan's Adjustable.....40%
Iwan's Stationary 30%
Pot.
Wire.....per doz. $0 75
Side-Walk.
Steel.....per doz., Net prices

CLEAVERS.

Family.

Beatty's, inch	7	8	9	10
Per doz.	$27 00	29 00	33 00	36 00

CLEVISES.

Malleable .....10c lb.

CLIPPERS.

Bolt..... $2 25&6 00

CLIPS.

Axle.....65&5%
Damper.
Standard.....per doz. 70c
Troy ..... " 38c
Hame ..... " 50c

CLOTH.

Emery.
Star .....New Prices
B. & A..... " "
Hardware Wire— Prices on application
Full rolls (100 ft.)
12 Mesh, galvanized.... "
14 " " .... "
16 " " .... "
18 " " .... "
Screen Wire. Prices on application.
12 mesh, painted, per 100 sq. ft... ....

COLLARS, STOVE PIPE.

Lacquered.

Inches	5	6	7
Fancy pattern, per doz.	80c	85c	$1 15

COMPASSES.

Carpenters'.....15%

COPPER—See Metals.

COPPERS—Soldering.

Pointed Roofing
3 lb. and heavier.....per lb. 37c
2½ lb..... " 38c
2 lb..... " 37c
1½ lb..... " 40c
1 lb..... " 43c

CORD.

Picture.
White Wire.....60&5%
Sash.
Sampson Spot, No. 7.per doz. $24 50
Sampson Spot, No. 8.per doz. $29 40

CORKSCREWS.

Walker's.....30%
Williamson's Regular.....35&11%
Williamson's Forged Worm.....40%

COTTERS, SPRING.

All sizes (new list) 80%

COUPLINGS, HOSE.

Brass.....per doz. $7 25

COVERS, WAGON—See Tents.

CRADLES, GRAIN.

Morgan's Grapevine ..per doz. $45 00

CRAYONS—See Chalk.

CUTTERS

Glass.
Woodward....40%

Meat.
Enterprise—Nos. 5 10 12
Each $2 50 $4 25 $3 75
Nos. 22 32
" 6 50 8 50

Pipe.
Saunders', No. 1 2 3
Each.... $1 85 2 75 6 75

Slaw and Kraut. Per doz.
4-knife Kraut....$20 00-55 00
3-knife Kraut, 8x27 in.. 13 00-18 00
1-knife Slaw.... 2 50
2-knife Slaw.... 3 00
Washer.... 11 00

DAMPERS, STOVE PIPE.

Ideal
3"....$1 00
4"....1 05
5"....1 15
6"....1 25
7"....2 20
8"....3 75
10"....6 00

DIES AND STOCKS.

Discount....New List

DIGGERS.

Post Hole.
Eureka....per doz. $14 50
Iwan's Split Handle (Eureka)
4-ft. Handle....per doz.. 15 00
7-ft. " " " 20 00
Iwan's Perfection (Atlas) " 16 50
Iwan's Hercules pattern " 18 00
See also Augers—Post Hole.
Dividers, Wing....25%

DOOR CHECKS—See Checks.

DOORS, SCREEN.

¾-in. 4-panel, painted....Net Prices
1⅛-in. 4-panel, painted.... "
1⅛-in. 3-panel, natural pine, fancy.... "

DOOR HANGERS—See Hangers.

DRILLS.

Blacksmiths' Twist. (New List)....40%

Breast.
Millers Falls No. 12....Each, $46 00
" " " 112.... " 26 00

Hand.
Goodell's Automatic.
Nos. 01 03
Per doz. 12 00 14 40
Goodell's Single Gear, per doz. 15 75
Goodell-Pratt No. 4½ per doz. list, less....30%
Goodell-Pratt No. 379 per doz. list, less....30%

Reciprocating.
Goodell's....per doz 26 00

DRIVERS, SCREW.

Standard....Nets
Lock Ferrule.... "
Champion.... "
Champion Pattern.... "
Clark's Interchangeable.... "
Edison.... "
Reed's Lightning.... "
Goodell's Spiral.... "
Yankee Ratchet.... "
" Spiral.... "

EAVES, TROUGH.

65-10% off Standard List.

ELBOWS—Stove Pipe.

1-piece Corrugated, Uniform.

	Doz.
5-inch	$1 30
6-inch	1 45
7-inch	1 85

Uniform, Collar Adjustable

	Doz.
5-inch	$1 30
6-inch	1 45
7-inch	1 80

ELBOWS—Conductor Pipe.

Galvanized Steel, Tin and Terne. Round Corrugated.

Size.	Doz.
2-inch	40%
3-inch	65%
4-inch	65%
5-inch	65%
6-inch	65%

EMERY, TURKISH.

Size	1-lb.	5-lb.	10-lb.
Per pound	18c	14c	13c

EYES.

Bright Wire Screw—See Ooods, B. W.
Drifting Pick....60, 10&5%

Hooks and Eyes—
Brass, 1½" No. 60. .per gross, $3 50
Iron " " 50.. " 1 60

FASTENERS, STORM SASH.

Shroeder's....per doz. $1 50
Sensible.... " 3 00

FILES AND RASPS.

Delta
Delta....30%
Swiss....List plus 25%
Utility.... " net.

Nicholson's—
American....60%
Arcade....50-10-7½%
Black Diamond....50&5%
Eagle....50-10-7½%
Great Western....50-10-7½%
Kearney & Foot....50-10-7½%
McClellan....50-10-7½%
Nicholson brand....50&7½%
J. Barton Smith....50&2½%
X-F Swiss Pattern....Net list.

Simonds'....50%
Disston's....50&10%
Heller's....60&10%

FORKS.

Barley.
Steel, new list....New Prices
Hay.
2-tine....New prices
3- "....New prices
4- "....New prices
Digging....New prices
Scoop....New prices
Header.
3-tine....New prices
4- "....New prices
Manure.
4-tine....New prices

FREEZERS—ICE CREAM.

White Mountain	1-quart		@	Prices on application
" "	2	"	@	
" "	4	"	@	
" "	6	"	@	
Arctic	1	"	@	
"	2	"	@	
"	4	"	@	
"	6	"	@	

GAUGES.

Cream Pail.
Fairmount....per doz. $3 75
Marking, Mortise, etc....Nets

Wire.
Disston's....25%

GIMLETS.

Discount....35@40%

GLUE.

Bulk.
B Amber....per lb. 35c
A White.... " 40c
H. S. Amber.... " 32c

Liquid.
Army & Navy....40%
Le Page's—
List "A"....37½%
List "B"....33⅓%
List "C"....25 %

GREASE, AXLE.

Wood Boxes.
Frazer's....per gro. $13 00
Hub Lightning.... 7 50

Wood Pails.
Frazer's, 15lb. $1.00; 25 lb. $1.50 each
Hub Lightning, 15 lb. 90c; 25 lb. $1.21 each.

Tin Cans.
Frazer's
1½lb. per doz....$1 75
3 lb. per doz.... 3 25

GRINDSTONES.

Family.

Inches..	7	8	10	12
Per doz..	20 50	21 75	26 25	30 50

Loose.
Per ton.... Price on application

Mounted.

	1	2	3
Ball Bearing....			
Each....	$4 75	5 00	5 25

GUN WADS.

(See Ammunition).

GUNS.

Iver Johnson Champion Single Barrel Shot Guns....Net Prices
Double Barrel, Hammerless. "

HAFTS, AWL.

Brad.
Common....per doz. $0 35

Peg.
Patent, plain top.... " 80
Patent, leather top... " 90

Sewing.
Common.... " 24
Patent.... " 55

HAMMERS, HANDLED.

	per doz., net
Blacksmiths, Hand, No. 0, 26 oz.	$11 11
Engineers', No. 1, 26 oz....	11 11
Farriers', No. 6, 7 oz....	7 23
Machinists', No. 1, 7 oz....	6 65

Nail.
Vanadium, No. 41½, 16 oz., per doz....$17 50
V. B., No. 11½, 16 oz. per doz. 13 95
Garden City, No. 111½, 16 oz., per doz.... 11 90
Tinner's Riveting, No. 1, 8 oz., per doz.... 9 40
Shoe, Steel, No. 1, 13 oz. per doz. 10 00

Tack.
Magnetic.
Per doz.... $5 63

HAMMERS, HEAVY.

Heavy Hammers and Sledges.
Under 5 lbs....50%
5 lbs. and over....50&10%

Masons'.
Single and Double Face....50%

HANDLES.

Auger.
Common Assorted....per doz. $0 75
Pratt's Adjustable, Nos. 1 & 2, per doz.... 6 00
Ives' Adjustable....per set, 1 35
Axe....30%

Chisel.
Hickory, Tanged, Firmer, Assorted, 55c; Large, 85c per doz.
Hickory, Socket Firmer, Assorted, 70c; Large size, 80c per doz.
Coal Pick....40%
Drifting Pick....40%
File, assorted, 30c; Large, 35c per doz

Hammer.
Adze Eye....per doz. 40 to $1 00
Blacksmiths'.... " 45c@1 00
Machinists'.... " 50c@1 00
Hay and Manure Fork....25%

Screw Driver.
Assorted.... " 60
Large.... " 90
Shovel and Spade....25%

HANGERS.

Barn Door.
U. S. Rolled Bearing....12½%
Matchless....12½%
Warehouse Tandem, No. 44....33⅓%

Conductor P.
Iwan's Perfection.... 45%

Eave Trough.
All sizes. 5" or smaller, ...per gross. $3 80 Net
All sizes, larger than 5", ...per gross. 5 00 "

Garage Door.
Right Angle....50&10%
Sliding Folding....50%
Receding....50%

Parlor Door.
Acme....per set, $3 75
Ives' Improved.... " 3 40
Lane's Standard.... " 3 50
Lane's New Model.... " 3 10
Le Roy Noiseless....40&10%
Richards....25%
Advance....40&10%

HASPS.

Hinge, Wrought.... Add 50% to list.
With Staples—See Staples.

HATCHETS.

Crescent....50%
Cast Claw....per doz. $1 50@1 85
Cast Shingling.... " 1 50@1 85
Germantown....7½%

HAY KNIVES.

See Knives.

HAY RACK BRACKETS

Wenzleman's No. 1 per doz. sets, $18 00
Wenzleman's No. 2 " " 19 20

HINGES.

Blind.
Clark's Gravity

No. 1....per doz. sets,	$2 25		
No. 3.... " " "	5 75		
Gate.			
Clark's....	1	2	3
Hgs & Ltch, doz.	$5 50	7 00	9 75
Hinges only "	4 75	5 50	8 00
Latches only.	1 90	1 90	....

Screen Door.
Cast Iron....gross $10 00
Steel.... " 7 00

Spring.
Chicago....Add 12½% to list.
Columbia Dbl. Acting....40&10&5%
Gem....25%
Ideal Detachable....per gro. $11 00
Matchless....40%
New Idea....per gro. $7 20
Oxford....20%

Wrought Iron.
New Lists....
Light Strap Hinges....5&5%
Heavy Strap Hinges....20&7½%
Light T Hinges....List plus 5%
Heavy T Hinges....List plus 45%
Extra Heavy T Hinges....15&5%

Screw Hook and Strap.
6 to 12 in....per 100 lbs. $7 75
14 to 20 in.... " " 7 50
22 to 36 in.... " " 7 25

Screw Hook and Eye.
½ in....per doz. pair $2 60
⅝ in.... " " 3 50
¼ in.... " " 5 00

HOES.

Garden....Net

Grub.
Extra....New prices
Hazel....per doz. New prices
Ladies' and Boys'....New prices
Mortar....New prices
Planter's Eye....New prices
Weed....New prices

HOOKS.

Awning. No. 60....per gro 50%

Belt.
Brown's....70&5%
Jones'....65&5%

Bench.
See Stops, Bench.

Box.
Inch..... 5 7 10 12
Per doz...$2 50 2 75 3 25 3 85

Bush.
Common Axe Handle, per doz.$22 00

Chain.
Inch.. ¼&⅜ ½ ⅝ ¾
Pr 100 $7 60–8 10 9 75 11 50 12 60

Clothes Line.
Japanned.....per doz.48c @1 40
Galvanized..... " 75c@2 50

Coat and Hat.
Common Wire....per gro. 1 25-1 65

Conductor.
Iwan's Tinned Sickle.....List.

Corn.
Common, riveted, painted
red.....per doz. Nets
Little Giant..... " "

Gate.
See Goods, Bright Wire.

Grass.
Common Nos. 1 3 5 7
Per doz...$4 50 3 50 3 75 3 25

Hammock.
With plate.....per doz. 1 10
With screw..... " 1 00

Lambrequin, or Drapery, per gro...30c
Picture.....50%@50&10%
Potato and Manure.....Nets
Screw.
Brass.....70%

(See Goods, Bright Wire.)
Seat Spring.....per lb. 5½c

HOSE, GARDEN.

Per ft.
Guaranteed 3 ply ½ inch .....16 c
" 4 ply ½ inch 18½c
" 5 ply ½ inch 13½c

COTTON COV. RUBBER HOSE.

High Grade Apache 1" guar. press.
400 lbs.....40c

HUSKERS.

Boss.
Nos..... B E
Per doz.....New Nets
No. 59.....per doz. New Nets

IRON, PIG.

See Metals.—First column.

IRONS.

Curling.
C.....per doz. $4 40
B..... " 50
A..... " 58
Princess..... " 1 25
Thelma..... " 1 25
Pinking..... " 1 00

Plane.
Wood Bench.....Add 10% to list

Sad.
Charcoal.....per doz. $11 00
Common, polished, per 100 lbs. 7 75
No. 70 Asbestos.....$1 50 net
No. 100 " ..... 1 75 net
Common, nickel plated..... 8 25
Mrs. Pott's,
No. 50 J, Enterprise, per set, Nets
No. 55 J, " " "
No. 50 T, " " "
No. 55 T, " " "
Tailors' Sad.....per lb "
Tailors' Goose..... " "

Ideal.
6 lb. Household.....$3 50
9 lb. Dressmakers'..... 4 25
14 lb. Tailors' Goose..... 5 50

Tuyere.
Single Duck Nest....per doz. $5 25
Double Duck Nest... " 6 25
Sutton..... ....each 2 60

JACKS.

Locomotive.....30%

Wagon.
Richard's No. 1.....per doz. $15 50
Miller..... 20 00

Oliver,
Nos..... 0 00
Each..... $0 60 $0 80

Standard,
Nos..... 1 2
Each.....$0 60 1 00
R-W
Big Lift.....40%
Tiger.....40%

KETTLES.

Brass.....15%
Cauldron.....40&5%
Copper.....per lb. 27
Maslin.....40&10%
Sugar.....50%

KNIVES.

Beet Topping.
Clyde, 9-in. Scimiter Blade, dz. $3 85
California..... 3 40
Butcher. Per doz.
Beechwood Handles, 6" blade..$4 00
" " 7" " ..4 65
" " 8" " .. 5 65
Cooper's Hoop.....15%

Corn.
Clipper.....per doz. $1 75
Disston's..... " 2 75
Earle's..... " 3 00
Woodford..... " 2 25

Drawing.
Standard.....(New List)...15%
Adjustable.....15%
Barton's Carpenters'.....15%

Hay.
Iwan's Solid Socket.....doz.$13 00
Heath's..... " 13 00
Iwan's, Sickle Edge..... " 15 00
Iwan's, Impv'd Serrated. " 15 50

Hedge.
Challenge.....per doz. $6 00
Disston's..... " 3 75

Mincing.
Common, Single..... " 60
Common, Double.. " 90
Streeter, 4-blade..... " 1 30
Streeter, 6-blade..... " 2 00

Putty.
Common..... per doz. $0 75@1 50
Lander's..... " 1 75@2 50

Scraping.
Beech Handle..... 90@1 10
Lander's..... 5 50@6 50

KNOBS.

Doors.
Mineral.....per doz. $2 10
Porcelain..... " 2 20
Jet..... " 2 20

LADDERS.

Common Long.
Per ft.....17c@23c
Extension.
Per ft..... 22 to 28
Step.
Common, per ft.....23c
Common, with Shelf, add 10c.
IXL.....34c
Challenge, 6 to 9 ft.....55c
10 to 16 ft.....60c

LANTERNS.

Bull's Eye Police.
3-in. Flash Light...per doz. $13 00

LEADERS, CATTLE.

Nos..... ..... 51 52
Per doz.....$1 35 1 45

LEATHER, LACE.

Rawhide ⅛".....100 ft. $3 00
" ¼"..... " 4 40

LEATHERS, PUMP.

Valve and Plunger.....10%

LIFTERS.

Stove Cover.
Coppered.....per gro. $3 25@5 50
Alaska..... " " 8 00
Alaska..... " " 10 00
Transom.
Payson's.....55%

LINES.

Chalk.
Twisted in 20-ft. hanks.
Nos. 4 6 7 8 9
Gro.....Prices on Application
Twisted in 50-ft. balls.
Nos..... 1 2 3 4
Per doz.....Prices on Application
Braided in 20-ft. hanks.
Nos..... 0 1 2 3
Per doz.....Prices on Application
Mason's..... " " "
Clothes.
60 ft. Jute.....per doz. $0 95
60-ft. Sisal..... " 40
50-ft. Cotton..... " 15
50-ft. Braided Cotton " 25

LINING, STOVE.

Bricks.....per crate, 42c

LOCKS.

Barn Door.
No. 60 Stearns.....per doz. $10 00
No. 80 " ..... " 17 50

MACHINES.

Riveting.
Stearns No. 1.....per doz. $12 00
Tenoning.
No. 50 Peace's Spoke...each $11 50

MAIL BOXES.

See Boxes.

MALLETS.

Carpenters'.
Fibre Head, No. 2, per doz. $16 50
" No. 3 " 19 50
" No. 4 " 28 50
Round Hickory..... " $3 00– 5 00
" Lignumvitæ.. " 6 25–10 50
Square Hickory..... " 3 50–5 50
" Lignumvitæ.. " 8 00–12 00
Tinners'.
Hickory..... " 2 25

MATS.

Door.
National Rigid.....50&10&5%
Acme Steel Flexible.....50%

Stove.
No. 2.....per gro. Nets
No. 1..... "
No. 1 Asbestos Toasters, or
wire-covered Stove Mats,
with handle.....per doz. 1 10
No. 2 Asbestos Toasters, with
ring.....per doz .. 60

MATTOCKS.

Plumbs.....25%

MAULS.

Iron, lbs.... 10 13 16 18
Per doz.....Prices on Application
Wood Face, lbs.... 10 12 14
Per doz.....Prices on Application
Wood Choppers'.
Lake Super'r & Oregon Pat. 40&5%

MEASURES.

Galvanized, doz.....Nets
Japanned, doz.....Nets

MILLS, COFFEE.

Enterprise.....16⅔%
Parker.....50&5%
Arcade.....40-10%

MITRE BOXES.

See Boxes.

MOPS.

Cotton. Star (Cut Ends).
Pounds 12' 15' 18' 24'-3 oz.
Per doz. $4 50 5 65 6 75 9 00

MOWERS, LAWN.

Gladiator—B. B.
Inches..... 16 18 20
Each.....$6 50 7 25 8 00
King Universal—B. B.
Each.....$5 25 5 75 6 00
Inches..... 14 16 18
Big Giant.....$3 50 3 90 4 25

NAILS.

Cut Steel.....Prices on Application
Cut Iron..... " " "
Wire.
Small Lots ...Prices on Application
Cement Coated.
Small Lots....Prices on Application
Horseshoe.
Ausable.....55&5%
Capewell.....15%
Perfect.....55&5%
Putnam.....20&5%
Star.....30&5%
Picture.
Brass Heads 25%
Brads.....50&5%
Furniture.....List plus 15%

NAIL PULLERS.

See Pullers.

NAIL SETS.

See Sets.

NETTING, POULTRY.

Galvanized before weaving.....50%
Galvanized after weaving.....45%

NIPPERS.

End Cutting.
Stubb's Pattern, Inches. 5 6
Per dozen.....$4 65 6 75
End and Diagonal Cutting.
Swedish Side. Inches.. 5 6
Per dozen.....$4 50 5 75
Hoof.
Heller's.....40&10%
V. & B.....55&5%

NOZZLES.

Hose.
Magic.....per doz. $9 50
Diamond..... " 5 75

NUTS, HOT PRESSED

Square Tapped.
$1.85 off per 100 lbs.
Hexagon Tapped.
$1.85 off per 100 lbs.

OILERS

Chase Pattern.
Brass and Copper.....10%
Zinc..... 33⅓%
Engineers'.
Tin.....per doz. $7 00@ 9 00
Machine.
Common.....per doz. $0 85

OPENERS.

Box.
See Box Chisels
Can.
Delmonico.....per doz. $1 30
Never Slip..... " 65
Crate.
V. & B..... " 7 25-11 00

OUTFITS, COBBLING

Combination.....per doz.$16 00
Economy..... " 8 50
Family..... " 14 50

PAILS.

Cream.
14-qt., without gauge,per doz. $9 50
18-qt., " " " 11 00
20-qt., " " " 11 75

Sap.
10-qt., IC Tin.....per doz. $4 00
12 " " ..... " 5 50

Stock
Galv'd. qts. 14 16 18 20
Per doz...$9 75 10 75 12 75 14 50

Water.
Galvanized, qts.. 10 12 14
Per doz.....$5 75 6 50 7 25
Wood.
Cable, 2-Hoop.....per doz. Nets
Cable, 3-Hoop..... " Nets
Cedar, 3-Hoop,brass.. " Nets

PANS.

Dripping.....Net

Fry.
Common.....Nets
Acme..... "

Roasting.
Paxton,
Nos.... 1 2 3 4
Per doz.....Nets
Neverburn..... "
Savory No. 200.....per doz. $8 40

PAPER.

Building.
Plain.....per 100 lbs. Prices on Application
Tarred..... "
Tarred Felt..... "
Red Rosin, per ton.....$75 00

Sand and Emery.
No. 1, per ream, best grade.... $5 40
No. 1, per ream, cheaper grade. 4 85

Wrapping.
Express.....100 lbs. Nets

PARERS

Apple.

Goodell's.....per doz. $10 80
Turntable..... " 11 10
White Mountain.... " 8 40
Reading, No. 78.... " 11 40

Potato.

Goodsell's Saratoga, 10½ in., dz. 6 50
Goodsell's Saratoga, 5 in., dz. 5 50

PICKS.

Adze Eye Ore.....22½%
Drifting and Poll Picks.....22½%
Plumbs, Railroad.....22½%
Surface.....22½%

PINCERS.

Carpenters', cast steel.

Inches	6	8	10	12
Per doz.	$3 75	4 75	6 25	7 00

Blacksmiths'.....45%
Heller's.....40%

PINS.

Clothes.

Common....per box of 5 gro. $0 95

Picket

Fluted, 15-in.....per doz. $1 10
Fluted, 21-in..... " 1 60
Spiral..... " 1 90

PIPE.

Conductor.

Plain Round and Round Corrugated

29 Gauge.....65%
28 " 55%
26 " 45%
24 " 20%

Square Corrugated A and B and Octagon.

29 Gauge.....50%
28 " 45%
26 " 35%
24 " 15%

Galvanized Toncan Metal, Genuine O. H. Iron, Lyonore Metal, Charcoal Iron and Keystone C. B.

Plain Round and Round Corrugated

28 Gauge.....50%
26 " 40%
24 " 15%

Square Corrugated A and B Polygon and Octagon.

28 Gauge.....45%
26 " 35%
24 " 15%

14 and 16 oz. Copper, all designs..20%

Portico Elbows.

Galvanized and Terne Steel.

1 -inch.....45%
1¼-inch.....45%
1½-inch.....45%
2 -inch.....45%
Tubing.....40%

Discounts on Round apply on sizes 2 inch to 6 inch inclusive.

Freight allowed on 15 dozen or more Less than 15 dozen F. O. B. Factory

Terms: 30 days net, 2% ten days.

Standard Gauge Conductor Pipe, plain or corrugated.

Not Nested.....55%
Nested solid.....60% of

Stove.

	Per 100 Joints
29-Gauge, 3-inch	$12 2[illegible]
" 4-inch	13 7[illegible]
" 5-inch	15 2[illegible]
" 6-inch	16 25
" 7-inch	19 00

T-Joint, Made-up.

6-inch.....per 100 $35 00

Furnace Pipe.

Double Wall Pipe and Pittings 25%
Single Wall Pipe, Round Pipe Fittings..... 25%
Galvan'd and Black Iron Pipe, Shoes, etc.....20%

PLANES.

Stanley Iron Bench.....net

PLATES, TIN.

See Metals in Column 1.

PLIERS.

Giant, Button's—Nets

Cutting.

Bernard's.....New Prices
Lodi.....New Prices
Paragon.....New Prices

Fencing.

Black Bull.....All Nets
Farmers' Choice.....All Nets
Russell's.....All Nets

Flat and Round Nose.

Bernard's.....New Prices
Lodi.....New Prices
Paragon.....New Prices

Tinners'.

Hollow.....Net list
Solid.....each, 10c

PLUMBS AND LEVELS.

Common.....Nets
Cook's.....40%
Davis' Iron.....25%
Davis' Inclinometer.....15%

POINTERS, SPOKE.

Stearns' No. 1.....per doz. $ 8 00
" No. 2..... " 10 00

POKERS, STOVE.

Wr't Steel, str't or bent per doz. $0 75
Nickel Plated, coil hanl's " 1 10

POLISH.

Metal.

Wizard, 6 oz.....per gross $18 00
" ½ pt..... " " 20 40
" 1 pt..... " " 36 00
" 1 qt..... " doz. 6 00
" ½ gal..... " " 10 80
" 1 gal..... " " 18 60

Stove Per gross

Black Eagle Paste 5 oz.....$13 80
" " " ½ lb..... 17 40
" " " 1 lb..... 31 20
" " " 5 lbs. per case..... 5 25
Black Eagle Liquid, 6 oz. per gross..... 15 60
Black Kid Paste, 5 lbs. per case 6 00
Black Jack Liquid ½ pt. per gross..... 15 60
Black Jack Paste #10 per gross 13 20

FIRE POTS.

Clayton & Lambert's, each $4 00@6 00
Gate City.....each, 6 25
Gem.....each, $6 75@8 50

POWDER.

See Ammunition.

PRESSES, FRUIT AND JELLY.

Enterprise Manufacturing Co....25%

PRIMERS.

See Amunition.

PRUNERS.

Disston's Pole.....per doz. $18 00
Water's Improved..... " 60%

PULLERS.

Cork.

Daisy.....each, $3 10
Phœnix..... " 1 40
Quick and Easy..... " 2 70

Nail.

Giant.....per doz. 14 50
Never-Slip..... " 17 00

PULLEYS.

Awning—Jap'd.....10%
Clothes Line.....10%

Hay Fork.

Iron Wheel, 5-in.....per doz. 2 50
Wood Wheel, 6-in.... " 2 65
Wood Wheel, 6-in., pass knot, ...per doz. 3 00

Sash.

Common.....Net
Common-Sense, 2-in.....Net
Empire Pattern, 2-in.....Net
Ideal.....Net
Steel.....Net

PUMPS.

Pitcher Spout.

Nos.	1	2	3	4
Each				Nets

Spray.

Midget Junior..... per doz. 3 75
New Misty..... " 6 00
Crescent..... " 6 50

PUNCHES.

Conductors.

No. 22.....per doz. $3 00
Machine.....per lb. 25

Saddlers'.

Common.....per doz. 1 50 to 5 00

Revolving Spring.

Stearns, No. 10.....per doz. $ 6 25
" No. 40..... " 12 00
" No. 60..... " 16 00

PUTTY.

Strictly pure.....per 100 lbs. $4 25

RAIL.

Barn Door.

Matchless, 1-in..... 5c
Matchless, 1¼-in..... 7c
Storm King..... 5c

Sliding Door.

Bronzed wrought iron...per ft. 8½c

RAKES.

Garden. Per doz.

Steel, Bow, 12-inch Teeth.... $8 50
Steel, Bow, 14-inch " 9 25
Malleable Iron, 12-in. " 4 75
Malleable Iron, 14-in. " 5 00

Hay.

Wood, 10 Teeth.....$4 00

Lawn.

20 Teeth.....per doz. $5 50

RASPS—See Files.

RAZORS—SAFETY.

Gillette.....per doz. $45 00
Auto Strop..... " 45 00
Gem..... " 8 40
Gem (3 doz. lots)..... " 8 00
Ever Ready..... " 8 40
Ever Ready (3 doz. lots) " 8 00

RAZOR STROPS.

Star (Honing).....50%

REGISTERS.

Japanned, Bronzed & Plated....30%
Solid Brass or Bronze Metal prices on application.....
Baseboard.....30%

REGISTER FACES.

Japanned, Bronzed and Plated.

4x6 to 14x14.....30%
14x14 to 38x42.....50%

REVOLVERS.

Iver Johnson Safety Automatic Hammer..... New N[illegible]
Hammerless..... "
I. J. Model 1900..... "

RINGS AND RINGERS.

Bull.

Copper	2½-in.	3-in.
Per doz.	$2 75	$3 25

Rea's Improved Self-Piercing copper, doz. 3 40
Steel, per doz..... 1 50 1 80

Hog.

Blair's Rings.....per doz. $ 75
Blair's Ringers..... " 1 00
Brown's Rings..... " 72
Brown's Ringers..... " 1 00
Hill's Ringers..... " 1 00
Hill's Ring, boxes.... " 72
Major Rings..... " 60
Perfect Ringers..... " 1 50
Wolverine Rings..... " 1 65
Wolverine Ringers... " 1 10

Fruit Jar.

White.....per lb.....30c

Key.

Split, round.....per doz. $0 17
Split, square..... " 32
Ball, round..... " 40

RIVETS.

Copper Belt.....Add 15% to list
Coppered Iron.....30%
Tinners'.....30%
Hame.....per lb. $0 17
Slotted Clinch.....per doz. 60c@1 10
Tubular.

Nos. 1 and 2 assorted sizes, 50 in box.....doz. 75c
Nos. 1 and 2 assorted sizes, 10 in box.....doz. 1 40

RIVET SETS.

See Sets.

ROPE.

Cotton.

¼, 5-16 in. Com. on reels, per lb....85c
¼, 5-16 in. Com. in coils. " ...85c

Sisal

1st Quality 20c
No. 2 .....17½c

Pure Manila.

1st quality, base....per lb. 25½c
Hardware Grade ...per lb. 24½c

RULES.

Hickory Board 10%
Log 10%

SAWS.

Band.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

Buck.

Disston's.....Prices on applic'n
Jackson's..... New nets

Butchers'.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

Circular.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n
Hiles'..... New nets

Compass.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

Coping.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

Cross-Cut.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

Dehorning.

Disston's.....Prices on applic'n

Flooring.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

Hack.

Disston's.....Prices on applic'n

Hand and Rip.

E. C. Atkins & Co. Prices on applic'n
Disston's No. 7...Prices on applic'n
Disston's Nos. 8, D8, 12, 76, 112, D100, and 120..Prices on applic'n
Keystone..... New nets

Keyhole.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

Miter Box.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

Panel.

E. C. Atkins & Co. Prices on applic'n
Disston's No. 7...Prices on applic'n

Patternmakers'.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

Pruning.

Disston's.....Prices on applic'n

Stairbuilders'.

E. C. Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

Wood.

E. C Atkins & Co. Prices on applic'n
Disston's.....Prices on applic'n

SAW BUCKS—See Bucks.

SAW SETS—See Sets

SAW TOOLS—See Tools.

SAW FRAMES.

Common, plain.....per doz. $1 50
Common painted.... " 2 10

SCALES.

Counter.

Pelouze.....40&10%

SCISSORS.

Star.....60%

SCOOPS.

Grain.

½ bu. "Hercules"....per doz. 3 70
1-bu. "Hercules"..... " 5 00

SCRAPERS.

Box.

Triangular, No. 6....per doz. $6 25

Road.

Cubic ft.	7	5	3
With runners, ea.	$7 00	6 50	6 20

SCREEN DOOR HINGES.

Cast iron.....gross, $13 00
Steel..... " 9 50

SCREWS.

Bench.

Iron, ins.	1	1½	1½	1½
	$9 75	11 50	13 75	21 50

Wood, white maple...per doz. 6 00
Hand—Wood.....35%
Hand Rail.....22½%
Jack.....33⅓%
Lag or Coach—all sizes, gimlet pointed.....45-5%

Saw—Centennial.

Nos.	1	2	3	4
Per doz.	47c	55c	75c	90c

Wood.

P. H. Bright.....70-10-10%
R. H. Blued.....65-10-10%
P. H. Jap'd.....62½-10%
P. H. Brass.....42½-10-5%
R. H. Brass.....40-10-5%
R. H. Nickel Plated.....57½-10%

SCYTHES.

Clipper, Grass.....per doz. $13 50
Honest Dutchman.... " 13 70

SETS.

Nail.
Square head..... per doz. $1 25
Cup point, knurled.. " 1 15

Rivet.
Farmers'.....per doz. $2 10
Tinners'.....25%

Saw.
Aiken's Pattern.....per doz. $6 50
Disston's Monarch... " 7 20
Disston's X-Cut..... " 13 50
Leach's..... " 80
Nash's Hand..... " 3 15
Nash's X-Cut..... " 4 20
Stillman's Lever..... " 1 30
Stillman's X-Cut..... " 2 50
Whiting Pattern, No. 21 " 5 75
Eccentric Anvil, Hand, No, 395, N. P. Morrill Pattern, ...per doz. 11 50

SHARPENERS, SKATE.

Diamond.....per doz. $1 60
Perfect.....1 20

SHEARS.

	Per Doz.
Nickel Plated, Straight, 6"....	$11 50
" " " 7"....	12 95
" " " 8"....	14 40
Japanned, Straight 6"....	10 25
" " 7"....	11 50
" " 8"....	12 80

Tinners'—See Snips.

SHEAVES, SLIDING DOOR.

Common.

Inches....	3	4	5
Per set.....	$1 40	1 75	2 40

Hatfield's.

Per set....	$1 80	2 10	2 75	2

SHELLS—See Ammunition.

SHELLERS, CORN.

Union.....per doz. $6 75

SHIELDS.

Expansion Bolt Shields.....60%

SHOES.

Conductor.....60%

SHOT—See Ammunition.

SHOVELS AND SPADES.

Coal.
No. 2, Woodford.....per doz. $5 50
No. 182..... " 6 00
Ames', new list.....Discount, 12½%

Neverbreak, hollow bck, blk.... Per doz. Nets
National... " " "
Buckeye... " " "
Mohawk... " " "

Bar Drain & Ditching
Iwan's Perfection.....$30 00

Railroad, etc.

	Black Diamond.....per doz.	Net
Crescent.....	"	"
Keystone.....	"	"
Star.....	"	"
Hollow Back.....	"	"
Ames', new list.....Discount, 12½%		

Snow.
Galvanized, with wood handle, No. 56.....$1 45
No. 55..... 1 55

Alaska Steel.
D-Handle.....per doz. $3 50
Long Handle..... " 3 00

SINKS.

Cast Iron.
Painted, 16x24..... Net
Enameled, White, 16x24..... "

Wrought Steel.
Painted, 16x24..... "

SLEDGES—See Hammers.

SNAPS, HARNESS.

Covered Spring.....Add 30%
Judd's Pattern.....Add 33⅓% to list

SNATHS.

Double Ring, Bush.....per doz. $9 75
Patent Loop, Bush..... " 10 00
Patent Loop, Grass.... " 8 75

SNIPS, TINNERS'.

Clover Leaf.....40&10%
National.....40&10%
Star.....50%

SOLDER—See Metals.

SPRINGS, DOOR.

Perfect.

Nos.....	2	3	4	5	6	7
Per doz..	55c	60c	65c	75c	90c	1 00

Reliance.

	Light	Medium	Heavy
Per doz..	$1 55	2 10	3 20

Torrey's.....per doz. 1 65

SPRINKLERS, LAWN.

Stearns' No. 1.....per doz. $9 75

SQUARES.

Steel and Iron.....Nets new list
(Add, for bluing, $3.00 per doz., net.)
Mitre.....
Try..... Nets
Try and Bevel.....
Try and Miter.....
Fox's.....per doz. $6 00
Winterbottom's.....10%

SQUEEZERS, LEMON.

Common Wood.....per doz. $0 70
Porcelain Lined, Wood. " 1 25
Boss, malleable iron.... " 1 20
Iron frame, porc'n bowl " 1 90
Iron Frame, glass bowl.. " 2 35
Little Giant, tin'd iron.. " 4 00
Drum, japanned..... " 3 60
Drum, nickel plated.... " 4 50

STAPLES.

Blind.
Barbed.....per lb. 21@22c

Butter Tub..... " 16@19c

Fence—
Polished.....per 100 lbs. $5 45
Galvanized..... " 6 15

Netting.
Galvanized.....per 100 lbs. 6 50

Wrought.
Wrought Staples, Hasps and Staples, Hasps, Hooks and Staples, and Hooks and Staples.....50&10%
Extra heavy.... .....35%

STEELYARD.

Discount 25%.

STONES.

Axe.

Hindostan.....per lb.	New Nets
More Grit..... "	"
Washita..... "	"

Emery.
No. 126.....per doz. New Nets

Oil—Mounted.

Arkansas Hard No. 7	per doz.	New Nets
Arkansas Soft.....	"	"
Washita No. 717...	"	"

Oil—Unmounted.

Arkansas Hard....per lb.	New Nets
Arkansas Soft..... "	"
Lily White..... "	"
Queer Creek..... "	"
Washita..... "	"

Scythe

Black Diamond....per gro.	New Nets
Crescent..... "	"
Green Mountain. "	"
LaMoille..... "	"
Extra Quinnebog. "	"
Red End..... "	"

STOPS, BENCH.

No. 10 Morrill pattern, per doz. $10 00
No. 11 Stearns " " 8 75
No. 15 Smith " " 6 50

STOPPERS, FLUE.

Common.....per doz. $1 10
Gem, flat, No. 3..... " 1 00
Gem, No. 1..... " 1 10

STOVE PIPE—See pipe.

STOVE BOARDS—See Boards.

STOVE POLISH—See Polish.

STRAPS.

Shats.....per doz. 85c & 1 20

STRETCHERS.

Carpet.
Bullard's.....per doz. $3 90
Excelsior..... " 5 25
Malleable Iron..... " 70
Perfection..... " 6 30
King..... " 4 50

Wire.
O. S. Elwood, No. 1...per doz. Nets
O. S. Elwood, No. 2.. " "

SWIVELS.

Malleable Iron.....per lb. $0 10
Wrought Steel.....per gro. 4 50

TACKS.

Bill Posters' 6-oz., 25 lb. boxes, per lb..... 15c
Upholsters' 6-oz., 25-lb. boxes, per lb.....15½c

TAPES, MEASURING.

Asses' Skin.....List	Net
Lufkin's Steel.....	"
Lufkin's Metallic. List to list plus	20%
Lufkin's Pocket.....	10%

THERMOMETERS.

Tin Case.....per doz.	80c@	$	1 25
Wood Back... "	$2 00@		12 00
Glass..... "			12 00

TIES.

Bale.
Single Loop, carload lots....75&7%
" " less than car lots 70&15%

Cow—See "Chains."

TOOLS, SAW.

Disston's Universal.....40%

TRAPS.

Game with Chains.

Victor No. 1.....	$1 65
Oneida Jump No. 1.....	2 25
Newhouse No. 1.....	3 85

Mouse and Rat. Net per gross

Out O'Sight Mouse.....	$ 8 00
" " Rat.....	15 00
" " Mole.....	100 00
#44 Pocket Gopher.....	20 00
Victor Mouse.....	2 60
Hold Fast Mouse.....	2 60
Victor Rat.....	11 00
Hold Fast Rat.....	11 00
Official Rat.....	13 50
Wood Choker Mouse, 4 Holes	11 00

TROWELS.

Brick.
Clover Leaf.....30%
Brade's.....15&5%
Disston's.....30%
Rose's..... Net

Plasterers'.
Clover Leaf.....40%
Disston's.....25%
W. & McP.....Net

TRUCKS.

Bag.....each, $3 75
Warehouse or store.
No. 1, each.....$24 50
" 2, " 32 50

TUBS, WASH.

Standard, Wood,				Ex. large
Nos.....	3	2	1	
Per doz..	$9 50	11 25	12 75	15 50

Galvanized.

No.....	1	2	3
Per doz.....	15 20	14 50	20 00

TWINE.

	Market Quotation
3-ply Cotton Wrapping.....	
4 " "	
4 Extra Wrapping.....	
4 " Hvy. Wrapping..	
4 " Wrapping on tubes...	
3 " " cones...	
4 " " " ...	
India Hemp, ½-lb. balls, No. 18..	
2-ply Jute, 1-lb. balls.....	

Seins.

	Market Quotation
Soft.....per lb	
Med..... "	"
Hard.... "	"
Staging, ½-lb. ball, size 21.....	"
" " " 24.....	"
" " " 27.....	"
Bagging, ½-lb ball.....	"
3-ply, "B" in hanks.....	"
4- " "B" "	"
3- " "A" "	"
3- " Silver Finish, in hanks...	"

Fodder or Lath.
130 strand.....

VISES.

No. 21, Hand..... $5 00
Oval Slide,

Inches	2	2½	3	3½	4½
Each	$2.40	$2.60	$3.00	$3.75	$7.75

No. 1, Genuine Wentworth, Noiseless Saw.....per doz. 18 50
No. 2, Genuine Wentworth, Noiseless Saw.....per doz. 20 00
No. 3, Genuine Wentworth, Noiseless Saw.....per doz. 28 00
No. 500, All Steel Folding Saw .....per doz. 13 50

WARE.

Glue Pots.
Tinned.....Add 15% to list
Enameled.....30%

WASH BOARDS—See Boards.

WASHERS.

Standard O. G. cast iron...per lb. 3½c
Wrought steel in 5-lb. boxes, per lb.:

In.	3/16	¼	5/16	⅜	½	⅝	¾	1
	18c	16c	15c	13c	12c	11½c	11c	11c

WEDGES.

Ax.....per doz. Nets
Galling.....per lb. "
Saw..... " 8½

WEANERS.

Calf.
Fuller's, per doz.....$2 00 to $2 50
Tyler's Safety, per doz. 1 85 to 2 40
Carroll's, per doz.... 3 00 to 3 75
Hoosier, per doz..... 3 50 to 4 60
Shaw Perfected..... 3 00 to 3 75

WEIGHTS.

Hitching.....per lb. Nets
Sash—f.o.b. Chicago
Ton lots, per ton.....$60 00
Smaller lots, per ton..... 63 00

WHEEL BARROWS.

No. 4 Tubular Steel.....@ $7 25
Common Tray or Stave Tray @ 2 75
Angle leg, garden..... @ 4 75

WHEELS.

Carborundum.....50%
Emery.....60%
Well. Ins..... 8 10 12
Per doz.....$5 50 7 25 8 50
12 in. heavy hoisting, per doz. $25 00

WIRE.

Brass.
In coils.....Nets
In 1-lb spools, new list.....Nets

Broom—Tinned.....Nets

Cable—Same price as Barbed Wire.

Copper.
In coils.....Nets
1-lb. spools, new list.....Nets

Fence—Smooth. An'eal'd Galv'd
Nos. 6 to 9, less than car, per 100 lbs....$4 25 $4 95

Hair—New List.....40&10%

Market. Market Quotations
Bright, full bdles..... "
Bright, broken bdles..... "
Coppered, full bdles..... "
Coppered, broken bdles..... "
Tinned, full bdles..... "
Tinned, broken bdles..... "

Picture—In coils.....80%@80&10%
In 5-lb. spools.....per lb.....26c

WRENCHES.

Coes Steel Handle,	6 inch.....		30%
" " "	8 "		30%
" " "	10 "		30%
" " "	12 "		30%
Coes Knife-Handle,	6 "		30%
" " "	8 "		30%
" " "	10 "		30%
" " "	12 "		30%
Coes All Patterns.....			30%

Bemis & Call's:
Adjustable S, 15%; Adjustable S Pipe, 15%; Briggs' Pattern, 10%
Combination Bright.....15%
Steel Handle Nut.....20%
Combination Black.....15&5%
Merrick Pattern.....10%

Knife Handle Pattern.
No. 62, Screw Wrench. List, plus 5%
No. 60, Steel Handle..

WRINGERS.

No. 790, Guarantee....per doz.		$61 00
No. 770, Bicycle.....	"	57 00
No. 110, Domestic....	"	50 50
No. 110, Brighton.....	"	46 50
No. 740, Bicycle.....	"	55 00
No. 22, Domestic....	"	48 50
No. 22, Pioneer.....	"	44 50
No. 770B, Bicycle.....	"	92 00
No. 781B Guarantee...	"	101 00

ADVERTISERS' INDEX

ALPHABETICAL LIST

Abbott Mfg. Co..... 58
Allen Co., Inc., L. B..... 58
American Furnace Co..... 7
American Sheet & Tin Plate Co..... 57
American Steel & Wire Co..... 61
Auer Register Co..... 11
Beckwith Co..... 5
Berger Bros. Co..... 59
Bertsch & Co..... 59
Black Silk Stove Polish Works..... 15
Brier Hill Steel Co..... 56
Bullard & Gormley Co..... 63
Central Heating Supply Co..... 14
Chatsworth Mfg. Co..... 61
Clark & Co., Geo. M..... 4
Clark-Smith Hdw. Co..... 57
Clayton & Lambert Mfg. Co..... 58
Cleveland Castings Pattern Co..... 14
Coes Wrench Co..... 61
Corbin Screw Corporation..... 60
Cortright Metal Roofing Co..... 57
Curfman Mfg. Co., F. L..... 54
Danville Stove & Mfg. Co..... 6
Delta File Works..... 62
Diener Mfg. Co., G. W..... 58
Double Blast Mfg. Co..... 58
Dover Wood Face Co..... 15
Dreis & Krump Mfg. Co..... 59
Eagle Pencil Co..... 54
Fanner Mfg. Co..... 15
Friedley-Voshard Co..... 57
Gerock Bros. Mfg Co..... 57
Hall-Neal Furnace Co..... 14
Hammond Heating Co..... 8
Harrington & King Perforating Co... 57
Hart & Cooley Co..... 11
Haynes-Langenberg Mfg. Co..... 2
Hemp & Co..... 59
Henry Miller Fdy. Co..... 3
Hero Furnace Co..... 6
Hess-Snyder Co..... 7
Hones, Inc., Chas. A..... 58
Howes Co., The S. M..... 15
Hussey & Co., C. G..... 59
Independent Register & Mfg. Co.... 11
Inland Steel Co..... 55
Jack Corporation, A. W..... 15
Kimball Bros. Co..... 54
Lovell Mfg. Co..... 61
Lufkin Rule Co..... 62
Magee Furnace Co..... 9
Mahoning Fdy. Co..... 2
Majestic Co..... 16
Marshalltown Mfg. Co..... 59
Meyers Mfg. Co., Fred J..... 54
Michigan Safety Furnace Pipe Co... 14
Milwaukee Corrugating Co..... 64
Niagara Machine & Tool Wo. ks..... 59
North Bros. Mfg. Co..... 60
Northwestern Stove Repair Co..... 15
Omaha Stove Repair Works..... 15
Peck, H. E..... 53
Quincy Pattern Co..... 14
Richards-Wilcox Mfg. Co..... 62
Ringen Stove Co..... 58
Rock Island Mfg. Co.....1-62
Safety Interlocking Stove Pipe Co.... 9
St. Louis Technical Institute..... 54
Scheible Moncrief Heater Co..... 7
Schwab & Sons Co., R. J..... 11
Spice Process, Alfred..... 58
Standard Ventilator Co..... 57
Stearns Registe. Co..... 12
Sterling Foundry Co..... 58
Sullivan-Geiger Co..... 54
Sykes Co., The..... 54
Tuttle & Bailey Mfg. Co..... 9
Utica Heater Co..... 8
Vedder Pattern Works..... 14
Victor Stove Co..... 8
Walworth Run Fdy. Co..... 13
Waterloo Register Co..... 14
Wellston Mfg. Co..... 60
Whitaker-Glessner Co..... 56
Wise Furnace Co..... 8
Wrought Iron Range Co..... 4
Z. T. Soot and Gas Consumer Co.... 11

CLASSIFIED INDEX

Accessories—Automobile.
Curfman Mfg. Co., F. L., Maryville, Mo.
Richards-Wilcox Mfg. Co., Aurora, Ill.

Asbestos Sheets.
Central Heating Supply Co., Chicago, Ill.

Bail Ties.
American Steel & Wire Co., Chicago, Ill.

Bins—Nail.
Wellston Mfg. Co., Wellston, Ohio

Bolts and Nuts.
Corbin Screw Corporation, New Britain, Conn.

Brakes—Bicycles.
Corbin Screw Corporation, New Britain, Conn.

Brakes—Cornice.
Bertsch & Co., Cambridge City, Ind.
Dreis & Krump Mfg. Co., Chicago, Ill
Niagara Machine & Tool Wks., Buffalo, N. Y.

Brass and Copper.
Hussey & Co., C. G., Pittsburgh, Pa.

Ceilings—Metal.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
Whitaker-Glessner Co., Wheeling, W. Va.

Chain—Furnace.
Central Heating Supply Co., Chicago, Ill.
Corbin Screw Corporation, New Britain, Conn.

Chimney Caps.
Sterling Fdy. Co., Sterling, Ill.

Chimney Tops—Revolving.
Sterling Fdy. Co., Sterling, Ill.

Clips—Damper.
Waterloo Register Co., Waterloo, Iowa

Consumers, Soot & Gas.
Z. T. Soot and Gas Co., Oshkosh, Wis.

Cornices.
Friedley-Voshardt Co., Chicago, Ill.

Cut-Offs—Rain Water.
Sullivan-Geiger Co., Indianapolis, Ind.

Dampers—Hot Air.
Howe Co., The S. M., Boston, Mass.

Eaves Trough.
Abbott Mfg. Co., Cleveland, Ohio
Berger Bros. Co., Philadelphia, Pa
Clark-Smith Hardware Co., Peoria, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis
Whitaker-Glessner Co., Wheeling, W. Va.

Elevators.
Kimball Bros. Co., Council Bluffs, Iowa

Enamel—Iron.
Nickel Plate Stove Polish Co., Chicago, Ill.
Black Silk Stove Polish Works. Sterling, Ill

Fence Gates.
American Steel & Wire Co., Chicago, Ill.

Fenders.
Meyers Mfg. Co., Fred J., Hamilton, Ohio

Files.
Delta File Works, Philadelphia, Pa.

Flue Thimbles.
Sterling Foundry Co., Sterling, Ill.

Flux—Soldering.
Allen Co., L. B., Chicago, Ill.

Freezers—Ice Cream.
North Bros. Mfg. Co., Philadelphia, Pa.

Furnaces—Soldering.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Diener Mfg. Co., G. W., Chicago, Ill.
Double Blast Mfg. Co., No. Chicago, Ill.
Ringen Stove Co., St. Louis, Mo.

Grindstones.
Richards-Wilcox Mfg. Co., Aurora, Ill.

Guards—Fire.
Meyers Mfg. Co., Fred J., Hamilton, Ohio

Handles—Boiler.
Berger Bros. Co., Philadelphia, Pa.

Hangers—Door.
Richards-Wilcox Mfg. Co., Aurora, Ill.

Hangers—Eaves Trough.
Abbott Mfg. Co., Cleveland, Ohio

Heaters—School Room.
Hammond Heating Co., Cincinnati, Ohio
Haynes-Langenberg Mfg. Co., St. Louis, Mo

Heaters—Warm Air.
American Furnace Co., St. Louis, Mo.
Beckwith Co., Dowagiac, Mich.
Central Furnace Supply Co., Chicago, Ill
Danville Stove & Mfg. Co., Danville, Pa.
Haynes-Langenberg Mfg. Co., St. Louis, Mo.
Hall-Neal Furnace Co., Indianapolis, Ind
Hammond Heating Co., Cincinnati, Ohio
Henry-Miller Foundry Co., Cleveland, Ohio
Hero Furnace Co., Chicago, Ill.
Hess-Snyder Co., Massillon, Ohio
Magee Furnace Co., Boston, Mass.
Mahoning Fdy. Co., Youngstown, Ohio
Majestic Co., Huntington, Ind.
Scheible-Moncrief Heater Co., Cleveland, Ohio
Schill Bros. Co., Crestline, Ohio
Schwab & Sons Co., R. J., Milwaukee, Wis.
Victor Store Co., Salem, Ohio.
Waterloo Register Co., Waterloo, Iowa
Wise Furnace Co., Akron, Ohio
Wrought Iron Range Co., St. Louis, Mo.

Horse Shoes.
American Steel & Wire Co., Chicago, Ill.

Jobbers—Hardware.
Bullard & Gormley Co., Chicago, Ill.
Clark-Smith Hardware Co., Peoria, Ill.

Machines—Crimping.
Bertsch & Co., Cambridge City, Ind
Niagara Machine & Tool Works, Buffalo, N. Y

Machines—Stove Pipe.
Hemp & Co., St. Louis, Mo

Machines—Tinsmiths'.
Bertsch & Co., Cambridge City, Ind.
Dreis & Krump Mfg. Co., Chicago, Ill.
Hemp & Co., St. Louis, Mo.
Niagara Machine & Tool Works, Buffalo, N. Y.
Spice Process Alfred Philadelphia, Pa.

Meat Smokers.
Chatsworth Mfg. Co., Chatsworth, Ill.

Metals—Perforated.
Harrington & King Perforating Co., Chicago, Ill.

Millboard—Asbestos.
Jack Corporation, A. W., Lockport, N. Y.

Miters.
Friedley-Voshardt Co., Chicago, Ill.

Nails—Slating.
Hussey & Co., C. G., Pittsburgh, Pa.

Nails—Wire.
American Steel & Wire Co., Chicago, Ill.

Ornaments—Sheet Metal
Friedley-Voshardt Co., Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.

Parts—Bicycles.
Corbin Screw Corp., New Britain, Conn.

Parts—Tools.
Corbin Screw Corp., New Britain, Conn.

Patterns—Furnace.
Auer Register Co., Cleveland, Ohio

Patterns—Stove.
Cleveland Castings Pattern Co., Cleveland, Ohio
Quincy Pattern Co., Quincy, Ill.
Vedder Pattern Wks., Troy, N. Y.

Pencils.
Eagle Pencil Co., New York City.

Pipe—Conductor.
Berger Bros. Co., Philadelphia, Pa.
Clark-Smith Hdw. Co., Peoria, Ill.
Friedley-Voshardt Co., Chicago, Ill.
Hussey & Co., C. G., Pittsburgh, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.

Pipe and Fittings—Furnace.
Central Heating Supply Co., Chicago, Ill.
Henry-Miller Foundry Co., Cleveland, Ohio
Michigan Safety Furnace Pipe Co., Detroit, Mich.
Safety Interlocking Stove Pipe Co., Mt. Pleasant, Iowa
Stearns Register Co., Detroit, Mich.

Pipe and Fittings—Stove.
Hemp & Co., St. Louis, Mo.
Michigan Safety Furnace Pipe Co., Detroit, Mich.
Safety Interlocking Stove Pipe Co., Mt. Pleasant, Iowa
Sullivan-Geiger Co., Indianapolis, Ind.
Whitaker-Glessner Co., Wheeling, W. Va.

Polish—Metal.
Black Silk Stove Polish Works. Sterling, Ill.
Nickel Plate Stove Polish Co., Chicago, Ill.